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507

CLASSIFICATION

OF THE

COLEOPTERA

OF

NORTH AMERICA.

PREPARED FOR THE SMITHSONIAN INSTITUTION

BY

JOHN L. LECONTE

AND

GEORGE H. HORN.

WASHINGTON:
SMITHSONIAN INSTITUTION.
1883.

ADVERTISEMENT.

The present work is one of a series published by the Smithsonian Institution for the purpose of facilitating the study of certain branches of the Natural History of North America which appear to require special aid. It has been prepared, at the request of the Institution, by Dr. LeConte and Dr. Horn.

SPENCER F. BAIRD,
Secretary S. I.

Smithsonian Institution,
Washington, February, 1883.

PHILADELPHIA:
COLLINS, PRINTER.

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PREFACE.

SINCE the publication of the first edition of this work,* which ended with the Cerambycidæ, no attempt has been made to complete the work. The classification of the remaining families of the so-called "Pseudotetramera" was very far from being in such a form as to be presented advantageously in an elementary work.

But within the last twenty years, not only have our collections been largely increased, but many genera previously unknown to our fauna have been detected, and perhaps a still larger number of new genera have been added.

Apart from a small number of general monographs published in Europe,† the additions have been made by re-studies of various families and groups by us with increased material; and by memoirs on local faunæ as of Florida and Michigan: in which the co-operation of Messrs. H. G Hubbard and E. A. Schwarz greatly lessened the labor. Similar memoirs on the local faunæ of Texas and California are in preparation, and will be hastened to completion as soon as time will permit.

The great series of Rhynchophora has been isolated from the other Coleoptera, and a monograph of our species published by us;‡ from this volume the classification of the genera of Rhynchophora of the present work has been condensed.

A small number of genera, which could not be satisfactorily placed in the progress of the sheets through the press, have been carefully examined, and will be found in Appendix I. To Mr. Samuel Henshaw, of Boston, we are indebted for a bibliographical list of the memoirs which may be consulted with profit by the student for the determination of species.

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* Part I. 1861–1862 (Smithsonian Series, No. 136, Mis. Coll., vol. iii.); Part II. 1873 (Smithsonian Series, No. 265, Mis. Coll., vol. xi.).

† *E. g.*, *Eucnemides* DeBonvouloir; *Dytiscidæ* Sharp, *Trichopterygidæ* Matthews, etc.

‡ Proc. American Philos. Soc., xv. 1876.

JOHN L. LeCONTE.

PHILADELPHIA, *January*, 1883.

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INTRODUCTION.

THE articulate branch of the animal kingdom consists of animals composed of simple rings, more or less similar to each other, which contain the organs necessary to animal life, and support the organs necessary for locomotion, prehension of food, and the organs of sense and reproduction.

According to the method in which this plan of structure is exemplified by the differentiations of the rings, articulate animals are divided into three classes:—

Body permeated by air vessels.	INSECTA.
Body without air vessels;	
Thoracic region distinct from abdominal.	CRUSTACEA.
Thoracic region not distinct.	VERMES.

The class Insecta is again divided by subordinate modifications of structure into three sub-classes:—

Head, thorax, and abdomen distinct, legs 6.	INSECTA.
Head and thorax usually agglutinated, legs usually 8.	ARACHNIDA.
Head distinct, legs numerous.	MYRIAPODA.

The first sub-class Insecta (genuina) alone occupies our attention for the present.

In examining the transformations of those passing from a larval form, frequently very different from the adult, we find that the principal changes may be grouped as follows:—

1. Greater concentration of the central organs, especially of the nervous ganglia, and diminution of the number of external segments.

2. Greater complication of the peripheral appendages (mouth, sense organs, legs, and wings).

3. Hardening or chitinization of the integument.

4. Transition from a mandibulate (chewing) to a haustellate (sucking) mouth, Lepidoptera.

We observe, also, that certain types, when hatched from the egg resemble in appearance the parent, and finally assume the characters of the adult after growth and repeated changes of skin. In others the individual (*larva*) emerging from the egg bears no resemblance to the adult, but after growth, accompanied with several changes of skin, passes into a condition in which a body similar to that of the perfect insect is covered by an integument which is finally shed. This condition is called the *pupa*, during which the animal is sometimes active, sometimes inactive.

In a few families of Coleoptera (Meloidæ, Rhipiphoridæ, and Stylopidæ, which are parasitic in their habits) there are two dissimilar larval forms, separated by an inactive (*pseudopupa*) condition, before the true pupa is evoluted: this method of development is called *hypermetamorphosis*.

The three thoracic segments are either (1) similar (except that the middle and posterior ones bear wings), or (2) agglutinated into one mass, or (3) the anterior one (*prothorax*) is freely movable, and the other two (*mesothorax* and *metathorax*) closely connected with each other and with the abdomen.

The parts of the mouth are also modified in form so that the mandibles and maxillæ are either free moving lateral organs fitted for prehension and mastication, or are elongated, forming a sucking tube of different construction in the different orders; in the former case the mouth is said to be *mandibulate*, in the latter *haustellate*. The wings are also of varied structure.

The embryological studies of insects are as yet not sufficiently progressed to enable us to subordinate these complications of structure in such manner as to determine which orders are higher and which lower. We can merely state in general terms, that those having a perfect metamorphosis are the highest; those having the thorax agglutinate, and those having the prothorax free are respectively higher than those in which the larval equality of the three thoracic segments is preserved.

The orders having numerous veins in the wings must also be considered as lower than those having but few.

The sub-class as represented in the present geological epoch may be divided into orders as follows:—

	Wings with a few principal veins; metamorphosis perfect, pupa inactive; larva mandibulate.	2.
	Wings variable; metamorphosis imperfect, pupa active; larva and imago haustellate.	7.
	Wings with numerous veins; pupa variable; larva and imago mandibulate.	8.
	Wings wanting; metamorphosis none; thoracic segments similar.	9.
2.	Thorax agglutinate.	3.
	Prothorax free.	6.
3.	Mouth mandibulate.	4.
	Mouth haustellate.	5.
4.	Four membranous wings fitted for flight.	HYMENOPTERA.
5.	Hind wings abortive.	DIPTERA.
	Four broad wings clothed with scales.	LEPIDOPTERA.
6.	Prothorax free, front wings not suited for flight.	COLEOPTERA.
7.	Front wings partly coriaceous, hind pair with but few veins; prothorax large, free, as in Coleoptera.	(HETEROPTERA) HEMIPTERA.
	Wings membranous, with numerous veins.	HOMOPTERA.
8.	Prothorax free, front wings unfitted for flight; hind wings folded like a fan.	ORTHOPTERA.
	Thorax variable, wings not folded, membranous, fitted for flight.*	NEUROPTERA.
9.	Abdomen without appendages; mouth mandibulate, except in Pediculidæ; (habits epizootic).	ANOPLURA.
	Abdomen with anal appendages; mouth mandibulate; body clothed with scales, like those of the wings of Lepidoptera.	THYSANURA.

The order Neuroptera is difficult to define, though the suborders composing it are very readily distinguished from any of the other orders.

Of these orders the first three constitute the division Metabola *Scudder*. They are the highest type of insects, and are characterized by agglutinate thorax (prothorax very small and not free), membranous wings with few veins, the anterior pair being the larger; and by perfect metamorphosis.

The other orders are grouped as Heterometabola, and the sequence in the table above given indicates the gradual degrada-

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* Those having an active pupa (Biomorphotica *Westwood*) are now called Pseudoneuroptera, and have been united by some authors with Orthoptera, with which, however, they appear to have but little affinity. The habits, as observed to us by Baron R. Osten Sacken, are quite different, the Orthoptera being terrestrial, using their wings only as accessories in progression, while the Pseudoneuroptera are essentially aerial, passing the greater part of the time on the wing.

tion in the thoracic segments and alar venation. This primary division seems to be the least objectionable yet proposed, and exhibits the most important affinities very clearly.

In geological succession, the Neuroptera and Orthoptera extend far back into palæozoic time, and are, moreover, connected together by some synthetic Ephemera and Perla-like forms of large size; Palæozoic cockroaches are also numerous. One palæozoic Coleopteron, said to be Scarabæide in its affinities has been recorded: the presence of such a form in that remote age would be quite impossible, and if Coleopterous at all, it must be a Rhynchophore. Some subcortical borings in palæozoic conifers* would indicate the presence of a Scolytide. In the middle of the mesozoic period Coleoptera were numerous, and not remarkable in any way, except as showing the more northern extension of subtropical forms.

The genus Eugereon,† found in Birkenfeld, Germany, in strata of Permian age, indicates an order curiously synthetic between Hemiptera and Neuroptera, which with some still older synthetic types are classed together as Palæodictyoptera.

Fulgorina or allied forms occur in palæozoic strata.

One Heteropteron (Phthanocoris) has been found in carboniferous near Kansas City, Missouri.‡

The other orders, so far as known, appear in the mesozoic, and successively increase in number and variety up to the tertiary period. In that period the entomological fauna seems to have been very similar to that prevailing at the present time, and the remains of Coleoptera and of other firmly chitinized forms are found in certain localities in great abundance.

In the scheme of orders given in the foregoing table several so-called orders are attached as families to the principal types of which they are extreme modifications. Thus Aphaniptera are suppressed into Diptera; Achreioptera become the Coleopterous family Platypsyllidæ, and Strepsiptera become Stylopidæ. The Euplexoptera and Thysanoptera are united with Orthoptera, and the Trichoptera become a sub-order of Neuroptera. A still farther reduction has been proposed by Burmeister in suppressing the

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* Brongniart, Ann. Ent. Soc. Fr., 1877, 215, pl. vii.

† Dohrn, Stettin Ent. Zeitung., 1867, 145, pl. i.

‡ Scudder, Proc. Boston Soc. Nat. Hist., 1882, 59.

Anoplura, placing the mandibulate families with Orthoptera, and the suctorial Pediculidæ with Hemiptera.

Having thus exhibited the elementary characters upon which the orders are based, the special subject of the present treatise may now occupy the attention of the student.

In order that the body of the work may be made intelligible to the beginner, it will be necessary to make a brief exposition of the external anatomy of Coleopterous insects, before attempting to define the numerous families which compose the order. The three regions, the head, thorax, and abdomen, will therefore be taken up in succession.

HEAD.

The anterior portion of the body is called the *head;* it varies greatly in form, and is joined by membrane to the prothorax. Usually the hind portion is but slightly narrowed, and enters the anterior part of the prothorax; sometimes the part behind the eyes is suddenly narrowed and constricted, forming a neck, or gradually narrowed and much prolonged, articulating with the prothorax by a semiglobular condyle, as in some Carabidæ and the Brenthidæ.

The surface of the head consists of a solid horny plate; above, it is frequently marked by a single suture, running transversely between or in front of the antennæ; this is called the *clypeal* or *frontal suture.* The portion in front of this suture, when dilated so as to project over the mouth, as in many Scarabæidæ, is called the *clypeus;* when small it is named *epistoma*, and is sometimes membranous or coriaceous, instead of horny like the rest of the surface. The anterior portion of the head is sometimes prolonged, so that the distance between the eyes and mouth parts is greater in length than the rest of the head; when thus formed the head is called *rostrate*, and the prolonged portion the *rostrum* or *beak.* The *rostrum* varies greatly in form and length; it is often not narrower than the head and even shorter, rarely, as in Balaninus, very slender, almost filiform, and as long as the entire body. The presence of the rostrum is quite general in the sub-order Rhynchophora, but not characteristic of it, as the rostrum is often absent here and present in other isolated genera of the Coleopterous series.

The rostrum is usually marked on each side by a more or less deep groove, which varies in length from a mere fovea to a long groove which gives lodgment in repose to the first joint of the antennæ; they are called *scrobes*.

The upper surface of the head is divided into regions, the back part being called the *occiput*, the middle the *vertex*, and the anterior portion the *front;* on each side of the head are the *eyes*.

The eyes of Coleoptera are very variable in form and shape, and are composed of aggregated small lenses; rarely they are entirely wanting; equally rarely accessory eyes are seen in the form of one or two simple lenses; they are situated between the compound eyes, on the posterior part of the vertex, and are called *ocelli*.

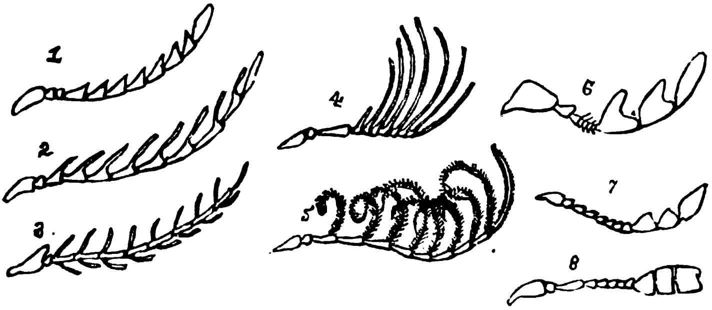
In the Cicindelidæ and Carabidæ, in addition to the ordinary pubescence, the head bears moderately long erect setæ arising from special punctures situated above and usually close to the eyes; from their position they are called *supra-orbital setæ*, and have been used as a means of subdividing the Harpalinæ.

The under surface of the head in front is variably excavated, forming the mouth; the parts beneath the eyes and behind the mandibles, forming the lateral boundary of the mouth, are called the *genæ;* behind the mouth the region is called the throat or *gula;* the suture between the mentum and gula is called the *mental suture;* when the gular region is more or less prolonged at middle for the support of the mentum, this portion is called the *sub-mental peduncle;* from the opening of the mouth two sutures may usually be observed running backwards; these often coalesce at middle, but separate at each extremity; these are called the *gular sutures*. In the sub-order Rhynchophora there is but a single suture, the lateral members of the head having apparently coalesced at middle without any true gular piece between them.

ANTENNÆ.—The *antennæ* are articulated appendages which vary in form, insertion, and the number of joints. In the first or normal series of Coleoptera they are inserted in front of and more rarely between the eyes—usually under the side margin of the front. In the Rhynchophora the antennæ arise from some portion of the rostrum in any position from the margin of the eye to the tip of the beak. The number of joints varies, attaining in our fauna the minimum in Adranes, where there are but two joints, and the maximum in Prionus where 25–27 are seen. The usual number, however, is eleven.

The basal joints of the antennæ are usually of denser consistence than the outer ones and less pubescent. In the outer joints will be observed a structure intended for special sensibility, consisting of an immense number of pores, visible only under high magnifying power, and covered by a very delicate transparent membrane. These pores are usually generally diffused over the surface of the joints as in most Carabidæ and other predaceous Coleoptera, or aggregated in patches as in Zopherus, or confined to the protected parts of the lamellæ as in Scarabæidæ. In those genera in which the antennæ terminate in an abrupt club, the sensitive surface is confined almost entirely to the club, or even to but a small portion of it, as in some Histeridæ and many Rhynchophora. No serious attempt has been made to utilize these variations for the purposes of classification, except by Lacordaire in the Buprestidæ.

The forms of the antennæ may be reduced to the following types:—



Serrate Antennæ and Modifications: 1. Serrate, Ludius; 2. Pectinate, Corymbites; 3. Bipectinate, Prionocyphon; 4. Flabellate, Acneus; 5. Plumose, Dendroides; 6, 7, 8. Irregularly serrate, approaching the Clavicorn type; 6. Dorcatoma; 7. Aulicus; 8. Corynetes.

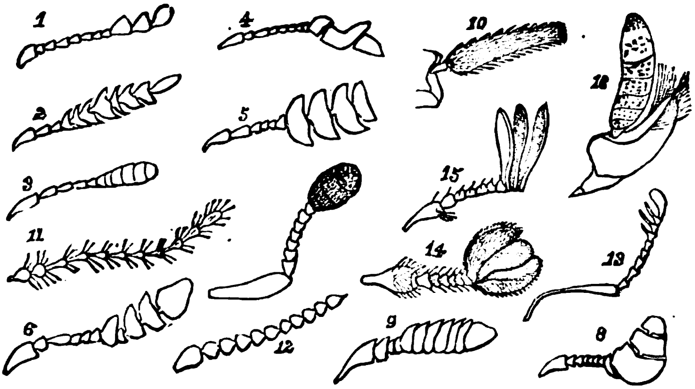
1. *Filiform*, where the joints are cylindrical, and the outer ones not or scarcely enlarged; when the joints are gradually more slender to the tip, the antennæ are said to be *setaceous*.

2. *Serrate*, where the joints are triangular and compressed, presenting therefore a serrate outline on the anterior margin; the outer joints (usually three in number) are sometimes enlarged,

forming a serrate club; the form varies by insensible gradations (as in the Cleridæ), from the regularly serrate form and the very flattened serrate club, to the small and more compact club of Corynetes; whereby we pass to the next type. Other modifications of the serrate type are:—

a. The joints are short, and very much prolonged anteriorly, giving the *pectinate*, or when on both sides the *bipectinate* form; when these prolongations are very long compared with the antennæ, the *flabellate* form results, and when long, slender, and flexible, *plumose.*

b. Rarely (as in Ptilodactyla) the branches in place of being an integral portion of the joint are articulated appendages; in this case the joints are called *appendiculate.*



CLAVATE ANTENNÆ: 1. Trogosita; 2. Catoptrichus; 3. Colon; 4. Bryaxis; 5. Anogdus; 6. Liodes; 7. Epierus; 8. Phymaphora; 9. Heterocerus; 10. Adranes. CAPILLARY AND VERTICILLATE: 11. Dasycerus. MONILIFORM: 12. Rhyssodes. LAMELLATE: 13. Lucanus; 14. Bolbocerus; 15. Lachnosterna. IRREGULAR: 16. Dineutus.

3. *Clavate*, where the outer joints are more or less enlarged, but not triangular or leaf-like. This is the most common form of antennæ, and its modifications connect insensibly with all the other types; names are therefore necessary for the purpose of more definite description. The principal forms are as follows:—

a. Moniliform or *granose*, when the joints, not differing greatly in size, are rounded, resembling a string of beads; this leads to the filiform type.

b. Clavate, where the outer joints are gradually larger, forming an elongate club.

c. Capitate, where the outer joints are suddenly larger, forming a compact rounded club; this leads gradually to the last type.

4. *Lamellate:* In this type the outer joints are prolonged anteriorly, opposing flat surfaces to each other, which may be brought closely in contact, forming thus a transverse, or rarely rounded, club, supported at one side by the stem of the antennæ. This form obtains in all Scarabæidæ.

Other modifications have been named, but, with the exception of two, these have not been used in the present treatise. They are, the *irregular* and *capillary*. The first name is applied to those antennæ in which certain of the joints have an unusual or extraordinary development, as in the Gyrinidæ or Platypsyllidæ; when, however, the irregularity is sexual, as in the males of some Meloe, the antennæ are said to be *deformed* in that sex. The *capillary* form is a modification of the clavate type, in which the joints are long, slender, and hair-like, and very loosely articulated, as in many Trichopterygidæ, some Scaphidiidæ, and in Dasycerus. In this form the joints are frequently surrounded at tip with a circle of longer hairs, in which case the antennæ are said to be *verticellate*.

Antennæ are called *geniculate* when the second joint is affixed so as to make an angle with the first; the following joints continuing in the line of the second. In this form the first or basal joint is usually much longer, and is called the *scape*. When the geniculate form is at the same time capitate, the joints intermediate between the scape and club are called the *funicle*. These terms are used more especially in the Rhynchophorous series, in which the geniculate-clavate type is the most common form of antennæ.

Mouth.—The mouth of Coleoptera is mandibulate; that is to say, it possesses two pairs of horizontally moving pieces for the purpose of seizing the food. Above the mouth there is usually a small piece, more or less transverse, articulating with the epistoma, which is called the upper lip or *labrum*.

The *labrum* is variable in form, and in nearly all the families of normal Coleoptera is distinctly visible. It may, however, be completely united with the epistoma, or retracted beneath it, and thus entirely concealed. In the Rhynchophora, excepting Rhinomaceridæ, Platypodinæ, and Anthribidæ, the labrum is entirely wanting.

Immediately below the labrum are the jaws or *mandibles;* they are of various shapes, but are generally curved and of moderate size; exceptionally, in the males of certain Lucanidæ, they are long and branched, like the antlers of a deer; at other times, as in certain Scarabæidæ, they are very small and partly membranous, while in the Platypsyllidæ their presence has not with certainty been detected.

The motion of the mandibles is always in a horizontal direction, the only exception in our fauna being Balaninus, in which, from the position of the condyles and the structure of the sides of the tip of the rostrum, the motion is vertical.

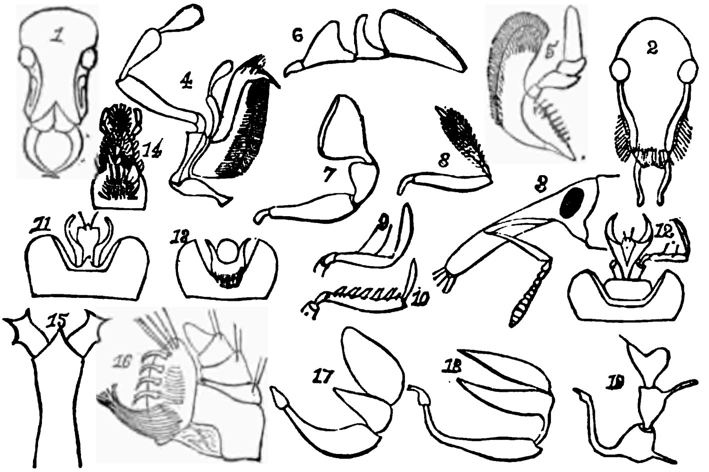
The form and structure of the mandibles are of great moment in classification, and the terms used in the present work are sufficiently definite without further explanation. The mandibles of nearly all Carabidæ have a rather broad and deep groove on the outer side, called the *mandibular scrobe,* near the distal termination of which may often be seen a large puncture bearing an erect seta, corresponding in its nature with those above the eyes.

In the Otiorhynchidæ the mandibles are provided with a deciduous cusp of varying form and size, which, in most cases, is lost soon after the insect reaches the mature condition. After the disappearance of the cusp its former presence is indicated by a scar, which is sometimes borne, either on the tip of a process, or, more commonly, on the face of the mandible itself.

Below the mandibles is a second pair of horizontally moving pieces, called *maxillæ;* they are complex in structure, and are of great importance in classification, and therefore demand a special paragraph.

MAXILLÆ.—The hind portion or base of the maxillæ is composed of two pieces; the first articulating with the inner side of the head behind the mentum, is called the *cardo* or *cardinal piece;* the second is the *stipes,* articulated, usually, at a more or less acute angle with the first. Attached to the stipes are the appendages, which are normally two *lobes* and one *maxillary palpus;* the lobes are varied in form, according to the families and genera, and sometimes one or the other is so small as to be indistinct; the outer lobe is occasionally, as in the Adephagous families, slender, and usually divided into two joints like a palpus, whence in the older books the insects of those families are said to have six palpi. The inner lobe is variously provided on the inner margin with ciliæ, spinous hairs, or even spines, and by a rare exception, as in most Cicindelidæ, the apex is terminated by a movable hook.

The *maxillary palpi*, which arise exterior to the lobes, are usually 4-jointed, rarely 3-jointed, and in Aleochara alone 5-jointed by the addition of a minute terminal piece; they vary in form, being filiform or dilated, and are occasionally of great size, as in most Pselaphidæ; sometimes very long and slender, as in most Hydrophilidæ; in the Rhynchophora they are very short and rigid; the last joint is very variable in form; when suddenly narrower and more slender than the preceding, the palpi are called *subulate*.



Mouth-parts or Trophi: 1. Head of Compsus with deciduous mandibular appendages; 2. The same of Trigonoscuta; 3. Head of Lixus with rostrum and scrobe; 4. Bilobed maxilla of Calosoma; 5. Unilobed maxilla of Epuræa; 6. Serrate maxillary palpus of Serropalpus, last joint cultriform; 7. Maxillary palpus of Xylita, last joint securiform; 8. Subulate maxillary palpus of Bembidium; 9. Bisetose labial palpus of Pterostichus; 10. Plurisetose labial palpus of Harpalus; 11. Mentum and labium of Morio, with tooth and epilobes, ligula and paraglossæ free; 12. Same of Diplochila, with hypoglottis or basal membrane of ligula; 13. Mentum and labium of Calosoma within the mouth, the paraglossæ confluent behind the ligula; 14. Mentum and ligula of Aphonus; 15. Tip of rostrum and mandibles of Rhynchites; 16. Maxilla and palpus of Eupagoderes; 17. Maxillary palpus of Cedius; 18. Same of Ceophyllus; 19. Same of Tmesiphorus.

Mentum and Labium.—Beneath the maxillæ, and between them, forming the floor of the mouth, may be seen the *mentum* and *labium*.

The *mentum* articulates with the anterior margin of the gula, which is sometimes prolonged forming a peduncle; the suture separating them is called the *mental suture.* The openings on each side of the mentum are called the *buccal fissures;* these permit free motion of the basal pieces of the maxillæ.

The mentum varies greatly in form and size, and gives important characters in the system of classification. It is usually small or moderate in size, trapezoidal or quadrate; rarely it is so large as to completely close the mouth beneath; it is frequently, as in Carabidæ and allied families, deeply emarginate in front, with a prominence called a tooth at the middle of the emargination; the presence and form of this tooth are of generic value. When deeply emarginate the lateral portions of the mentum are called the *lobes;* these are bordered on the inner side by a narrow piece, somewhat inflexed, extending even to the bottom of the emargination, and contributing to the formation of the tooth; these are called the *epilobes* of the mentum. Their structure has been used by Chaudoir for the definition of genera of Carabidæ, but no use is made of them in the present treatise.

In many families, especially in the Clavicorn and Serricorn series, the mentum appears to be divided into two portions; this results from a piece between the mentum and labium, called the *hypoglottis,* and which is usually entirely concealed, coming into view by reason of increased development; in the Carabidæ the homologous portion is often called the "basal membrane of the ligula," and is sometimes sufficiently developed to fill the emargination of the mentum.

The *labium* is placed usually in front of the mentum, or in the emargination between the two lobes; rarely it is almost entirely concealed. Three members enter into the formation of the labium —a central piece called the *ligula,* and on each side the *paraglossæ;* often the labium is entirely corneous, in which case the paraglossæ may be completely united with the ligula or even absent. The ligula is usually corneous, at least in part, often membranous; its form and size vary greatly. The paraglossæ are usually membranous; they reach their fullest development in the Carabidæ, and their variations have been used in classification. As the paraglossæ are often entirely absent, and the ligula alone remains, the term ligula has come to be used synonymously with labium.

Between the ligula and mentum are the supports of the labial palpi; these sometimes are largely developed, and in certain Scarabæidæ are entirely united together, forming what appears to be the ligula; the genuine ligula in these cases is almost atrophied, and is concealed behind the corneous plate formed by the labial supports. In the following pages the term ligula is used in both cases, and is to be understood to mean the piece in front of the mentum bearing the palpi, whether it be ligula proper or some other part.

The *labial palpi* are usually 3-jointed, but occasionally 2-jointed or even, in certain Staphylinidæ, filamentous, and not divided into joints. In the genus Aleochara they become 4-jointed, by the addition of a minute terminal joint. The terminal joint is usually of the same form as that of the maxillary palpi; it, however, differs in many genera of Carabidæ and Cleridæ. Characters of great value in classification have been derived from the form of the labial palpi.

THORAX.

The second division of the body is called the *thorax*, and consists of three segments, and which are variously modified as regards size and union in the different orders of insects.

In Coleoptera the first of these segments, the *prothorax* is separate from the other two, and is usually freely movable; it consists of a dorsal surface, the *pronotum*, of but one piece, which in other orders is sometimes divided into four parts; at the sides the dorsal surface is usually inflexed, forming part of the under surface of the prothorax, the acute margin, when it exists, not always limiting the pronotum; this inflexed portion is often called the *prothoracic epipleura*. The under side of the prothorax consists of a central member and a pair of pieces on each side; the first is the *prosternum*, situated in front of the coxæ and usually extending between them. The lateral pairs of pieces are best seen in the Carabidæ, the anterior is called the *episternum*, the posterior the *epimeron*. Most frequently the sutures between these pieces, and between them and the pronotum are entirely effaced, so that the dorsal surface and the flanks form, apparently, a continuous piece; the sutures separating the prosternum and side pieces are more often visible, and are called the *prosternal*

Fig. 1.

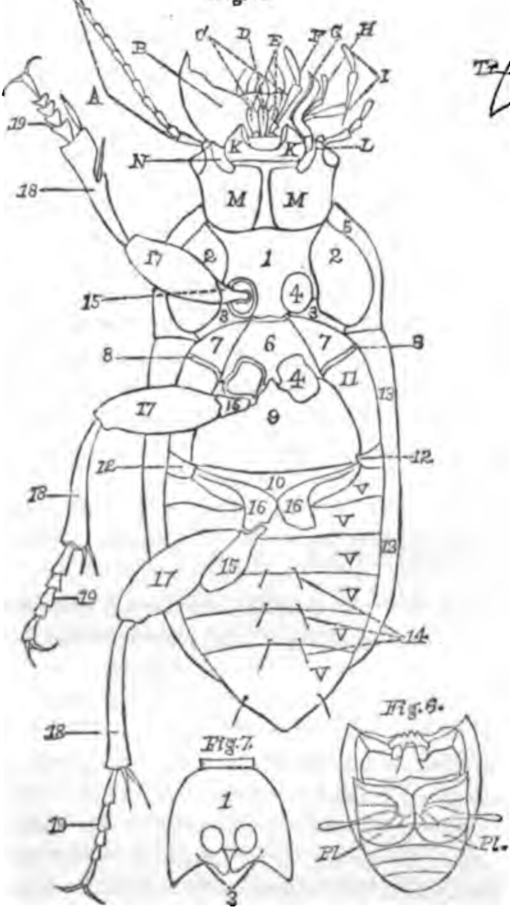


Fig. 2.

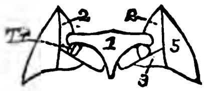


Fig 3.

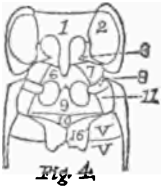


Fig. 4.

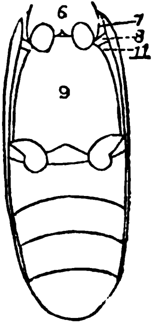


Fig. 5.

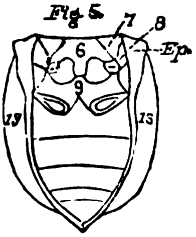


Fig. 1.—Under side of *Harpalus caliginosus* with details: *A*. Antennæ; *B*. Mandible; *C*. Labrum; *D*. Ligula; *E*. Paraglossæ; *F*. Labial palpus; *G*. Maxilla, inner lobe, *H*. outer lobe; *I*. Maxillary palpus; *K*. Mentum; *L*. Genæ; M. Gula, with the gular sutures; *N*. Buccal fissure; *V*. Ventral segments. 1. Prosternum; 2. Prosternal episternum; 3. Prosternal epimeron; 4. Coxal cavity, closed behind; 5. Inflexed side of pronotum; 6. Mesosternum; 7. Mesosternal episternum; 8. Mesosternal epimeron; 9. Metasternum; 10. Antecoxal piece; 11. Metasternal episternum; 12. Metasternal epimeron; 13. Inflexed side of elytron; 14. Ambulatorial setæ; 15. Trochanters; 16. Posterior coxæ; 17. Femora; 18. Tibiæ; 19. Tarsi.

Fig. 2.—Under side of prothorax of *Hydroscapha*, with open coxal cavities and, *Tr*. Trochantin.

Fig. 3.—Under side of *Calosoma*.

Fig. 4.—Under side of *Rhyssodes*.

sutures. The prosternum is sometimes prolonged in front forming a lobe which more or less conceals the mouth below when the head is in repose, as in many Elateridæ and Histeridæ; this is called the *prosternal lobe.* The posterior portion of the prosternum is variable in form, it is sometimes prolonged in a spine which extends deeply into the mesosternum as in Elateridæ. In many Rhynchophora the prosternum is deeply grooved at the middle for the reception of the rostrum in repose.

The cavities in which are inserted the anterior legs are called *anterior coxal cavities*, and are either *entire* when they are inclosed behind by the junction of the prosternum and epimera, or by the meeting of the epimera as in Rhynchophora, or *open* when a space is left protected only by membrane; they are *separate* when the prosternum extends between them, or *confluent* when the prosternum is not visible between them.

The second thoracic segment is called the *mesothorax*, and in Coleoptera is very closely united with the third segment or *metathorax*, which is also closely connected with the abdomen; these parts together form the trunk or main body of the insect.

These two segments support on the inferior surface the middle and hind legs, and at the sides of the dorsal surface the elytra and wings.

The dorsal surfaces of these two thoracic segments are covered by the elytra, and, consequently, invisible without dissection; they are called *mesonotum* and *metanotum*, and consist each of four pieces separated by sutures, and named, commencing with the anterior one of each segment, *proscutum*, *scutum*, *scutellum*, and *post-scutellum*. No use has yet been made of them in classification, except that the small triangular piece, usually visible between the elytra at their base, is mentioned under the name *scutellum.*

The under surfaces consist of the same pieces as the prothorax, viz.: respectively, *mesosternum*, with its epimera and episterna, and the *metasternum* with the same; these pieces are usually distinct, except that the two of each segment are often united

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Fig. 5.—Under side of *Eusattus erosus*, showing the true epipleura, *Ep.*

Fig. 6—Under side of *Cnemidotus*, showing the large coxal plates, *Pl.*

Fig. 7.—Under side of prothorax of *Rhynchophorus*, showing the closure of the coxal cavities by the epimera.

NOTE.—The numbered details on the last six figures refer to corresponding parts on Fig. 1.

forming a single piece; the suture which separates the mesosternal and metasternal side pieces from each other is always distinct. The form and extent of these side pieces are of great importance in classification, and characters drawn from them have been found very useful in a large number of families.

In the Carabidæ and some other families the metasternum is divided into two unequal portions by a suture which runs transversely a short distance in front of the posterior border; the smaller piece which borders the posterior coxæ in front and often passes between them, meeting the abdomen, is called the *ante-coxal piece* of the metasternum; its presence and extent determine the division of the Adephagous series into families.

These sternal side pieces are often called collectively the *parapleuræ* of the respective segments.

WINGS.—The anterior or mesothoracic pair of wings in Coleoptera are horny plates, called *elytra*, and vary greatly in shape and sculpture; faint traces of nervures are seen in many families in three or four lines of different sculpture; they usually cover the dorsal surface of the abdomen, but in many genera of widely differing families are very much shorter. The sides of the elytra are often limited by an acute margin, beneath which a portion of the elytron is inflexed; bordering the inner edge of this inflexed portion is a piece of varying width, extending sometimes from the base to the apex, called *epipleura*. The entire inflexed portion is sometimes erroneously called epipleura; in the present treatise the term is limited as above defined. The elytra are sometimes entirely wanting; this, however, is very rare in our fauna, and confined to a few females of some genera of Lampyridæ.

The posterior or metathoracic pair of wings are membranous, and have but few nerves; these are so arranged in most instances as to form a joint near the extremity, whereby the wing can be folded entirely under the elytra; in some genera with short elytra the wings are extended straight along the dorsal surface of the abdomen. The venation is subject to variation, but no results of importance for classification have yet been obtained by a study of these organs. Frequently the wings are entirely wanting, in which case the metasternum is usually short, and the elytra closely united or *connate*.

Legs.—The first joint of the legs, or that by which they are attached to the body, is called the *coxa*, and is received in appropriate cavities; the anterior coxal cavities are surrounded by the prosternum and adjoining pieces, usually the epimera, the episterna never reaching the coxal cavity proper; the cavities are frequently open behind, and rarely in such cases completed by the close apposition of the mesosternum. On the outer side of the anterior and middle coxæ, an additional piece is sometimes observed, which is sometimes connate with the coxæ, and often independently movable, this is called the *trochantin*, and to the additional space formed for the reception of it, the episterna often reach.

The middle coxæ are surrounded by the meso- and metasternum; when the closure is not complete the coxal cavities are said to be open externally, in which case a trochantin is often visible, and the epimera reach the cavity; occasionally, as in Carabinæ, the epimera form part of the outer margin of the cavity without any trace of trochantin.

The hind coxæ are placed between the metasternum and the first segment of the abdomen; the latter extends along the outer edge anteriorly so as to reach the side pieces of the metathorax, though frequently this junction can only be seen on raising the elytra.

The form of the coxæ is of the greatest importance in distinguishing the families.

On the under side of the prothorax a breathing pore, *stigma* or *spiracle*, is sometimes observed; it is usually placed behind the outer limit of the coxal cavity.

At the extremity of the coxa, and between it and the femur is situated a small piece called the *trochanter;* it varies in form, being usually situated in the axis of the thigh, and is more or less obliquely cut off; in many families the trochanters of the hind legs are quite prominent at the inner margin of the thighs, and connected with them only at the base; rarely the trochanters are greatly prolonged, and in one species of Patrobus are even slightly longer than the femur.

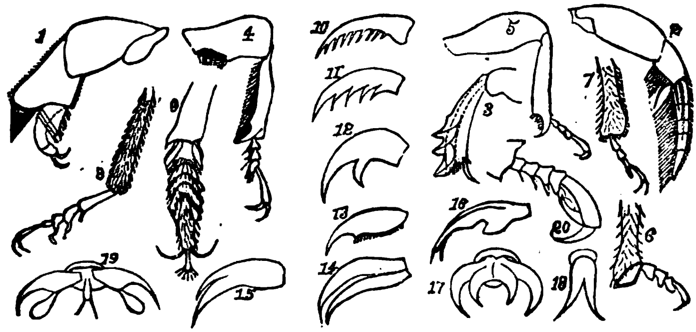
The first long piece of the legs is called the thigh or *femur;* following it is the *tibia.* The form of the legs varies greatly in different families; being either fitted for walking, *ambulatorial;* digging, *fossorial;* or swimming, *natatorial;* in the latter form, the hind legs assume the form of oars in Dytiscidæ and some Hydrophilidæ; or the middle and hind legs become short, broad, and flat, as in Gyrinidæ. At the extremity of the tibiæ are two movable spines, called *tibial spurs;* one or both of these may be entirely absent.

The tibiæ of the Rhynchophora are for the most part without spurs, but the tip has certain peculiarities of structure requiring special mention. The tip is often prolonged internally forming a hook of variable size; when this prolongation is from the inner apical angle the tibia is called *mucronate,* as in Sphenophorus, when from the outer angle, *unguiculate,* as in Cossonus. The articular cavities are not always at the tips of the tibiæ in Rhynchophora, but often on the inner side above the tip; in the latter case the tip of the tibia is often truncate, forming a more or less oval space surrounded by short fimbriæ, called the *corbel;* when this oval space is thus complete the *corbels* of the tibiæ are called *closed;* when, however, the articular cavity extends to the tip and the oval space is obliterated, the *corbels* are *open.*

Attached to the tibiæ is a series of from one to five pieces, constituting the foot, or *tarsus;* the last joint usually bears two claws, which, by a very rare exception, are sometimes wanting. The genus Phanæus and the family Stylopidæ are the only examples in our fauna in which this is the case; in the males of some Phanæus the anterior tarsi are entirely wanting. The tarsi vary greatly in the number of joints as well as in their structure. The greatest number of joints is five, and when one disappears it is usually lost on all the tarsi at the same time; from this the older authors took their basis of subdivision of the Coleoptera; those with five joints being called *pentamera,* with four *tetramera,* with three *trimera,* and with two *dimera.* A large series, however, has five joints on the anterior two pairs of feet, and four on the hind feet, these are called *heteromera.* These divisions have been in great part abandoned for a more natural arrangement of the families. Instances occur in the Clavicorn series in which the usual pentamerous tarsi become heteromerous in one or other sex; when the hind tarsus becomes 4-jointed it is usually in the male, when the anterior, the character is generally female. Rarely in some Clavicornia the anterior tarsi alone are 5-jointed, the other two pairs 4-jointed.

The tarsal joints vary in form, and may be slender and cylindrical, compressed, or flattened and dilated; their shape may be globular, cylindrical, triangular, or cordiform; frequently the penultimate joint is emarginate or bilobed. From the under side of the joints in some families there arise appendages more or less membranous in structures, called *tarsal lobes*. In some rare cases a joint is prolonged from its upper edge so as to cover the following joint. The under side or sole of the tarsus is variously clothed with spines, hairs, spongy pubescence, or lamellæ; the nature of the vestiture is often an indication of the sex. It is also quite common to find the anterior and often the middle also dilated in the males.

The claws, usually two in number, are also variable in form and structure, and give many characters for the distinction of genera and species; they are usually freely and independently movable, but in many instances they become united at base, and even nearly to the tip, they are then called *connate*. Instances rarely occur of the presence of one claw only; numerous examples are, however, seen of a greater or less inequality of size and even structure between the two claws, as in some Pselaphidæ, and the males of some Scarabæidæ. When the claws arise from the joint in such a manner that they diverge but little, they are called *divergent;* when, however, each arises from an opposite side of



NATATORIAL LEGS: 1. Dineutus; 2. Cybister. FOSSORIAL: 3. Copris. TIBIÆ: 4. Unguiculate, Rhynchophorus; 5. Mucronate, Cossonus; 6. Closed corbels, Eupagoderes; 7. Open corbels, Brachyderes. TARSI: 8. Lobed beneath, Dicrepidius; 9. Lobed and with onychium, Sandalus. CLAWS OR UNGUES: 10. Pectinate, Odontonyx; 11. Serrate, Melanotus; 12. Toothed, Lachnosterna; 13. Toothed and serrulate, Listrochelus; 14. Cleft with equal movable parts, Cantharis; 15. Unequally cleft, Phytalus; 16. Bifid also toothed, Ectopria; 17. Cleft and divaricate, Rhynchites; 18. Connate at base, Attelabus; 19. With membranous appendages, Placonycha; 20. Chelate, Plusiotis.

the joint forming a right angle with it, they are called *divaricate.* The claws are often *toothed*, *serrate*, or *pectinate*, and sometimes furnished with membranous appendages which arise near their base. When a claw is either partially or entirely divided so that there is an upper and a lower division, they are then called *cleft;* rarely, as in many Meloidæ, the upper and lower portions are equal, and both movable. The tip is sometimes divided so that the portions are side by side, in this case the claws are called *bifid.* When the claws are capable of being drawn back upon the last tarsal joint, they are called *chelate;* this form occurs in many Scarabæidæ, and enables the insect to grasp firmly small branches or leaves. Between the claws is seen in many species a small appendage, which is more or less retractile, called an *onychium;* this often bears at tip one or more bristle-like appendages, named *paronychia.*

ABDOMEN.

The portion of the body behind the metathorax is called the *abdomen*, and consists of a series of rings, the normal number of which is nine, though, by coalescence and disappearance, this number is not visible, two being retracted at the base and one at tip; these rings are divided into two portions; the *dorsal segments*, more or less covered by the elytra, and the *ventral segments*, visible on the under surface. The union between these takes place on the dorsal surface, and is by membrane, except in the penultimate pair, which are frequently very closely united.

The breathing pores, or *spiracles*, are situated in the connecting membranes, or in the upper inflexed portions of the ventral segments.

The ventral segments are not always opposed to and connected with the corresponding dorsal segments, but are situated differently in the different families, though no use is made of these differences for systematic arrangement. The number of segments visible on the dorsal surface is nearly always greater than on the ventral, and in most cases their structure is less dense and often membranous

The anal aperture is situated between the last dorsal and ventral segments, and below it, in the same fissure, is situated the genital opening; each side of this are horny valves, rarely visible externally, but sometimes of very complex structure, constituting the *genital armature.*

The last dorsal segment is called the *pygidium*, and the penultimate the *propygidium*, when they are exposed beyond the elytra. In the males of some genera, as in Nitidulidæ, a small accessory piece appears beyond the pygidium; while in a large number of Rhynchophora the pygidium is nearly equally divided in that sex, so that the males have one more dorsal segment than the females.

The ventral segments may be either entirely free so that the abdomen is flexible, or they may be more or less closely united, so that the last alone is movable. The sutures separating them are usually distinct when the segments are connate, sometimes, however, visible only at the side; their line may be straight or arcuate.

The surface of the ventral segments presents no character of systematic importance; often, however, sexual peculiarities are observed, such as tufts of hair, spines, or tubercles, which may be placed on any segment, but more commonly on the terminal. The latter is often emarginate in the male, and in some Telephorides assumes a degree of complication almost impossible to describe.

OTHER STRUCTURES.

Besides the parts of the body above described, there are certain structures occasionally seen, which, from being used for the discrimination of genera, need our attention.

Antennal Grooves.—These are grooves situated on the under side of the head or prothorax. When on the under side of the head, they usually pass close to the eyes and converge on the gula. When on the under side of the prothorax they may be in any position from the line of the prosternal sutures to the thoracic margin. Rarely the groove or fossa appears to divide the lateral margin of the thorax in front as in some Dermestidæ, and in a few instances the opening of the fossa is visible from above as in Murmidius, Bothriophorus, and Usechus.

Grooves for the lodgment of the tarsi when retracted are also observed in some families (Eucneminæ, Anobiinæ); these may be in the sternal pieces or on the ventral segments.

Stridulating organs, or organs for producing sound, exist in various families, and consist of finely wrinkled surfaces, frequently with a pearly lustre; the sound is produced by friction with some other part in the vicinity of these stridulating surfaces. The situation of these organs is inconstant; thus among the Scarabæidæ they are found in Trox, on the ascending portion of the first ventral segment; in Strategus, on the propygidium, and in Ligyrus on the inner surface of the elytra, which in many Cerambycidæ the mesonotum in front of the scutellum is wholly or in part covered with a stridulating surface, the sound being produced by the movement of the prothorax upon it.

Extensible vesicles are observed in one tribe of the family Malachiidæ; there are two pairs, one proceeding from a fissure beneath the anterior angles of the prothorax; the other pair emerging outside of and anterior to the hind coxæ.

The above sketch of the external anatomy of Coleopterous insects contains all that is necessary to enable the student to comprehend the following pages. Numerous other modifications of structure exist, but these are often of merely specific or sexual value, and are dealt with in essays of a monographic nature.

THE CLASSIFICATION OF COLEOPTERA.

Few persons, except those who have been trained in the laborious work of the laboratory and library, are aware of the immense difficulty of dealing with complexes containing such vast numbers of species as those which constitute the principal insect types. The species represented in the collections of the authors of this treatise are from our restricted fauna more than 11,000 in number.

The collection and the observation in the field of these small, but beautiful objects furnish a most agreeable and useful preliminary training to their investigation, but are in themselves, until subjected to the critical revision of the student, of small value for systematic or economic science, in so far as that they aid but little in forming the classification and stable nomenclature, upon which the knowledge of the objects treated of must rest, in order to permit them to be intelligently spoken of.

This much having been premised, as showing the necessity for a methodical system of arrangement, we may proceed to say that all Coleoptera fall into two primary divisions:—

I. Coleoptera (genuina) having the mouth parts normal, rarely atrophied, but never departing from the ordinary type. Palpi always flexible, maxillary usually 4-jointed, labial 3-jointed. Gular sutures double at least before and behind. Prosternum not cut off behind by the epimera (except in some Colydiidæ and in Cossyphus); prosternal sutures distinct.

II. Rhynchophora having the head more or less prolonged into a beak: the palpi rigid (except in Rhinomaceridæ and Anthribidæ), without distinct palparium; maxillary 4-jointed, labial 3-jointed; labrum absent, except in Rhinomaceridæ and Anthribidæ. Gular sutures confluent on the median line. Prosternum cut off behind by the epimera; prosternal sutures wanting. Epipleuræ of elytra wanting, except in Rhynchitidæ and Attelabidæ.

COLEOPTERA (genuina).

These indicate the following great complexes:—

I. Hind tarsi with the same number of joints at least as the others (except in a few Clavicorns, *e. g.*) ISOMERA.
II. Front and middle tarsi 5-, hind tarsi 4-jointed. HETEROMERA.

ISOMERA.

The following series may be recognized, though we are yet unable to define accurately the second and third.

A. Fourth and fifth tarsal joints not connate:
  First three ventral segments connate; 1st divided by the hind coxal cavities, so that the sides are separated from the very small medial part. ADEPHAGA.
  First ventral segment visible for its entire breadth (except in Rhyssodidæ);
    Antennæ clavate or capitate, very rarely serrate. CLAVICORNIA.
    Antennæ serrate, very rarely clavate, or capitate. SERRICORNIA.
    Antennæ with a lamellate club, the opposing surfaces with a very delicate sensitive structure; legs fossorial. LAMELLICORNIA.
B. Fourth and fifth tarsal joints anchylosed: the former very small; antennæ filiform, rarely serrate, or feebly thickened externally. PHYTOPHAGA.

ADEPHAGA.

This series contains but few families. The species are usually active, and their habits predaceous. Seven families compose this series, six of which are represented in our fauna, separated in the following manner:—

Metasternum with an antecoxal piece, separated by a well-marked suture, reaching from one side to the other, and extending in a triangular process between the hind coxæ;
  Antennæ 11-jointed; hind coxæ mobile and simple; habits terrestrial.
  Antennæ inserted on the front above the base of the mandibles. (p. 1) CICINDELIDÆ.
  Antennæ arising at the side of the head between the base of the mandibles and the eyes. (p. 4) CARABIDÆ.
  Antennæ 10-jointed; hind coxæ fixed, and with large plates almost entirely concealing the abdomen; habits aquatic. (p. 60) HALIPLIDÆ.
Metasternum with a very short antecoxal piece, the suture indistinct; posteriorly not prolonged between the coxæ; habits aquatic. (p. 59) AMPHIZOIDÆ.
Metasternum without antecoxal piece; prolonged in a triangular process posteriorly; habits aquatic;
  Antennæ slender, filiform, or setaceous; abdomen with six segments; eyes two. (p. 61) DYTISCIDÆ.
  Antennæ irregular, very short; abdomen with seven segments; eyes four. (p. 68) GYRINIDÆ.

The only family not represented in our fauna is the Pelobiidæ; it is related to the Amphizoidæ, differing by its conical front coxæ and natatorial legs. It is represented in Europe and Australia. Amphizoidæ until very recently was peculiar to our fauna, but a species of Amphizoa has been described within a few months from Thibet.

CLAVICORNIA.

This series and the next present so many exceptional cases that it is nearly impossible to assign other characters than those given in the table. It is here that the tarsal system has its feeblest value, as every possible variation exists from the pentamerous to the monomerous. As a general rule, in doubtful cases, any departure from the pentamerous tarsal structure is an indication of Clavicorn relationship. In the following table certain families and other subdivisions are included which are aberrant members of the Serricorn series (Sphindidæ, Cioidæ, Lyctinæ, Throscini); this is done for the convenience of the student, as the antennæ are so obviously clavate as to mislead one in respect to the affinities of these divisions, they are however included in the Serricorn table also, where their aberrant character becomes at once apparent. The families at present recognized in our fauna are distinguished as follows:—

Dorsal segments of abdomen partly membranous. 3.
Dorsal segments entirely corneous. 2.
2. Abdomen flexile, ventral segments eight. (p. 89) Staphylinidæ.
Abdomen not flexile, segments five or six. (p. 84) Pselaphidæ.
3. Ventral segments 1–4 connate; tarsi 4-jointed. 22.
Ventral segments 1–3 connate; tarsi 5-jointed. 21.
Ventral segments free. 4.
4. Tarsi 5-jointed, at least on one pair of tarsi. 5.
Tarsi 4-jointed. 14.
Tarsi 3-jointed. 9.
5. Mentum large, the palpi distant at base. 6.
Mentum moderate or small, palpi approximate at base. 7.
6. Mentum quadrate, hind angles not prolonged. (p. 69) Hydrophilidæ.
Mentum transverse, hind angles prolonged. (p. 76) Leptinidæ.
Mentum prolonged in three obtuse lobes behind.
(p. 73) Platypsyllidæ.
7. Anterior coxæ large, conical, prominent;
Posterior coxæ more or less conical and prominent. 8.
Posterior coxæ not prominent;
Antennæ moderate in length, capitate. 18.
Antennæ long, slender, sometimes capillary. 11.
Anterior coxæ conical, transverse, slightly prominent.
(p. 157) Derodontidæ.
Anterior coxæ rounded or oval, not prominent. 12.
Anterior coxæ transverse, not prominent. 16.
8. Eyes finely granulated, sometimes absent. (p. 77) Silphidæ.
Eyes coarsely granulated. (p. 83) Scydmænidæ.
9. Wings fringed with long hairs. 10.
Wings not fringed. 13.
10. Abdomen with 6–7 ventral segments;
Antennæ slender, verticillate, abdomen not prolonged.
(p. 107) Trichopterygidæ.
Antennæ short, not verticillate, abdomen prolonged.
(p. 108) Hydroscaphidæ.
Abdomen with 3 ventral segments. (p. 109) Sphæriidæ.
11. Last ventral elongate; tarsi long and slender. (p. 170) Scaphidiidæ.

12. Posterior coxæ not sulcate;
Posterior coxæ contiguous. (p. 177) PHALACRIDÆ.
Posterior coxæ separated; *a*.
a. First ventral more elongated. (p. 229) *Lyctinæ*.
Ventral segments subequal; *b*.
b. Middle coxal cavities open externally. (p. 131) CUCUJIDÆ.
Middle coxal cavities closed by the sterna; *c*.
c. Prosternum not prolonged behind. (p. 140) *Diphyllini*.
Prosternum prolonged, meeting the mesosternum; *d*.
d. Anterior coxal cavities open behind. (p. 135) CRYPTOPHAGIDÆ.
Anterior coxal cavities closed behind. (p. 124) *Dacnes*.
Posterior coxæ sulcate to receive the thighs. (p. 193) *Throscini*.

13. Tarsi with second joint dilated;
Claws appendiculate or toothed; first ventral with coxal lines. (p. 113) COCCINELLIDÆ.
Claws simple; first ventral without lines. (p. 119) ENDOMYCHIDÆ.
Tarsi with second joint not dilated. 15.

14. Wings fringed with hairs;
Posterior coxæ laminate, contiguous. (p. 82) *Clambini*.
Posterior coxæ not laminate, separate. (p. 112) CORYLOPHIDÆ.
Wings not fringed with hairs. 19.

15. Elytra entire; ventral segments nearly equal. (p. 155) LATHRIDIIDÆ.
Elytra truncate; ventral segments 1 and 5 longer.
Maxillæ one lobed; front coxæ subtransverse. (p. 152) *Smicripini*.
Maxillæ bilobed; front coxæ small, rounded. (p. 154) MONOTOMIDÆ.

16. Posterior coxæ flat, not sulcate. 17.
Posterior coxæ grooved for the reception of the thighs. 20.

17. Antennæ straight;
Tarsi more or less dilated, first joint not short. (p. 148) NITIDULIDÆ.
Tarsi slender, first joint short. (p. 152) TROGOSITIDÆ.
Tarsi slender, joints 1–4 short; posterior tarsi 4-jointed. (p. 233) SPHINDIDÆ.
Antennæ geniculate; tibiæ usually all dilated. (p. 143) HISTERIDÆ.

18. Posterior coxæ sulcate for the thighs; body usually scaly or pubescent. (p. 140) DERMESTIDÆ.

19. Anterior coxæ transverse. (p. 151) *Cybocephalini*.
Anterior coxæ globose;
Tarsi slender. (p. 120) *Mycetæini*.
Tarsi more or less dilated and spongy beneath. (p. 122) EROTYLIDÆ.
Anterior coxæ oval;
Coxæ separated by corneous prosternum;
Form depressed, head free. (p. 138) MYCETOPHAGIDÆ.
Cylindrical, thorax prolonged over the head. (p. 232) CIOIDÆ.
Coxæ contiguous, prosternum semimembranous. (p. 161) GEORYSSIDÆ.

20. Body oval, convex, legs retractile. (p. 158) BYRRHIDÆ.

21.	Last joint of tarsi long, claws large.	(p. 162) PARNIDÆ.
	Last joint of tarsi moderate, claws usual.	(p. 130) RHYSSODIDÆ.
22.	Antennæ regular, legs not fossorial.	(p. 125) COLYDIIDÆ.
	Antennæ short, irregular, legs fossorial.	(p. 166) HETEROCERIDÆ.

Of the numerous families of the Clavicorn series but few are not represented in our fauna, these are: Paussidæ, Gnostidæ, Hypocephalidæ, and Thorictidæ. These families are all more or less synthetic, and it is extremely difficult to define their relationships. The Paussidæ seem in many respects the nearest approach of the Clavicorns to the Adephaga. They are distinguished by the globular front and middle coxæ, and by having four ventral segments only. The Gnostidæ seem intermediate between the Paussidæ and Pselaphidæ; they have five* ventral segments, the first three connate, the sutures visible only at the sides; the anterior coxæ are conical, prominent, and contiguous, the middle globular and separated, the posterior transversely oval and distant; the tarsi have four joints, the antennæ three. The affinities of Hypocephalidæ have been the subject of a paper by Dr. LeConte (Trans. Amer. Ent. Soc., 1876, pp. 209-218), in which while the relationship of Hypocephalus with the Silphidæ, Cucujidæ, and Rhyssodidæ, as expressed by previous authors, is recognized, there is also an indication of certain Rhynchophorous affinities through the Brenthidæ. The Thorictidæ have relationship well expressed with the Cryptophagidæ, but more feebly with the Dermestidæ; the abdomen has five ventral segments, the first very long.

SERRICORNIA.

This series connects very closely with the Clavicornia, so that several of its members have been included in that table. It will be observed that in no part of this series do the tarsi depart from the pentamerous type, except in two families, Cioidæ and Sphindidæ, in which (also in the Lyctinæ and some Cleridæ) the closest approach is made to the Clavicorn series.

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* *Gnostus formicicola* Ww. (Trans. Ent. Soc. London, n. s., vol. iii. p. 92), is described as having but three ventral segments, but we have observed that the first segment is really composed of three which are completely connate at middle without trace of suture; at the sides, however, the sutures are quite evident, and indicate that the first three segments are subequal.

First and second ventral segments connate; antennæ serrate (pectinate in Xenorhipis ♂); tarsi with membranous lobes. (p. 193) BUPRESTIDÆ.
Ventral segments free (except in Anobium and Gastrallus). 2.
2. Tarsi 4-jointed; antennæ clavate (flabellate in Rhipidandrus). (p. 232) CIOIDÆ.
Tarsi heteromerous. (p. 233) SPHINDIDÆ.
Tarsi 5-jointed. 3.
3. First ventral segment elongated; antennæ terminated by a 2-jointed club. (p. 229) *Lyctinæ*.
First ventral not elongated. 4.
4. Hind coxæ sulcate for reception of thighs. 5.
Hind coxæ not sulcate, flat. 10.
Hind coxæ not sulcate, prominent. 12.
5. Front coxæ globose. 6.
Front coxæ transverse. 7.
6. Prothorax loosely articulated, prosternum prolonged behind; front coxal cavities entirely prosternal. (p. 176) ELATERIDÆ.
Prothorax firmly articulated, prosternum prolonged behind; front coxal cavities closed behind by mesosternum; antennæ sometimes with 3-jointed serrate club. (p. 192) THROSCIDÆ.
7. Onychium small or wanting. 8.
Onychium large and hairy. (p. 175) RHIPICERIDÆ.
8. Head not constricted behind; eyes granulated. 9.
Head constricted behind; eyes smooth. (p. 229) CUPESIDÆ.
9. Mesothoracic epimera attaining the coxæ. (p. 167) DASCYLLIDÆ.
Mesothoracic epimera not attaining the coxæ. (p. 220) PTINIDÆ.
10. Prosternum prolonged behind. 11.
Prosternum not prolonged behind; tarsi with membranous lobes. (p. 216) CLERIDÆ.
11. Front coxal cavities entirely prosternal. (p. 191) *Cerophytinæ*.
Front coxal cavities partly in mesosternum. (p. 193) *Lissomini*.
12. Front coxæ without trochantin. 13.
Front coxæ long, with distinct trochantin. 14.
13. Front coxæ large, globose. (p. 227) *Bostrichinæ*.
Front coxæ conical prominent; tarsi slender. (p. 231) LYMEXYLIDÆ.
14. Ventral segments seven or eight. (p. 201) LAMPYRIDÆ.
Ventral segments five or six. (p. 212) MALACHIIDÆ.

All the families at present recognized as members of this series are represented in our fauna.

LAMELLICORNIA.

This series is one of the most sharply defined, and its members have never by accident been placed elsewhere, and very few foreign elements have been introduced. The antennæ are terminated by a lamellate mass of varying form, composed, usually, of three joints, although the number sometimes reaches seven. The mass may be oblong, as in the Melolonthinæ and Pleurosticti, or lenticular, or even globular in many Laparosticti, while in the Lucanidæ the club is somewhat flattened, and the joints not capable of that close apposition observed in the Scarabæidæ.

The families are distinguished as follows:—

Lamellæ of club of antennæ not capable of close apposition, and usually not flattened. (p. 234) LUCANIDÆ.
Lamellæ of club capable of close apposition, not flattened. (p. 237) SCARABÆIDÆ.

The place assigned this series in the present work is not that usually followed in the books, most authors placing it between the Clavicornia and Serricornia. Such a course seems to distroy the evident lead of these two series into each other, inasmuch as the Lamellicornia have very little relation with either. We were unwilling to follow this custom, as such, merely because others had done so before, and but one course seemed open, namely, to place them at the end of the Pentamera. Probably the better course would have been to place them at the beginning of the classification, following the ideas of Burmeister and others.

PHYTOPHAGA.

The few families contained in this series are almost incapable of definition, and though each of them is characterized by an appearance, or *habitus*, which cannot be mistaken, any attempt to separate them by distinct characters has thus far been illusive.

The following is the nearest approach that can at present be made to a tabulation of the families:—

Antennæ with diffused sensitive surface; tarsi dilated and spongy beneath, except in Hæmonia and Stenopodius. 2.
Sensitive surface of antennæ in deep impressions; tarsi not dilated. (p. 264) SPONDYLIDÆ.

2. Submentum not pedunculate. 3.
Submentum pedunculate. 4.

3. Antennæ usually long or greatly developed, frequently inserted upon frontal prominences; front often vertical, large, and quadrate; pronotum rarely (Prioninæ) margined; tibial spurs distinct. (p. 267) CERAMBYCIDÆ.
Antennæ moderate or short, not inserted upon frontal prominences; front small, oblique, sometimes (Hispini, Cassidini) inflexed; pronotum most frequently margined; tibial spurs usually wanting. (p. 334) CHRYSOMELIDÆ.

4. Front prolonged into a broad quadrate beak; antennæ inserted in front of the eyes, variable in length, serrate, or pectinate; tibial spurs distinct or obsolete. (p. 356) Bruchidæ.

The name Phytophaga, used for this series, is generally employed in a more restricted sense, meaning the Chrysomelidæ alone. All the recognized families are represented in our fauna.

HETEROMERA.

In an arrangement of the series of Coleoptera based on the tarsal system, the Heteromera have been placed between the Pentamera and Tetramera, not that they have been supposed to have any special relationship to either, nor to be a link between them, but apparently from the fact that in the aggregate the number of tarsal joints was one greater than the Tetramera and one less than the Pentamera. While all authors admit that the Heteromera form a sharply limited series, into which but few foreign elements have ever been introduced, it is not by any means an easy matter to define sharply the differences between the Clavicornia and the present series, there is no difficulty, however, in distinguishing the individual members of either series from those of the other.

The families represented in our fauna are separated in the following manner:—

Anterior coxal cavities closed behind. 2.
Anterior coxal cavities open behind. 3.
2. Tarsal claws simple;
  Ventral segments five;
    Ventral segments in part connate;
      Penultimate joint of tarsi not spongy. (p. 358) Tenebrionidæ.
      Penultimate joint of tarsi spongy beneath. (p. 392) Lagriidæ.
    Ventral segments free; anterior coxæ small. (p. 391) Othniidæ.
  Ventral segments six, the last two closely united, the first two connate. (p. 387) Ægialitidæ.
  Tarsal claws pectinate. (p. 389) Cistelidæ.
3. Head not strongly and suddenly constricted at base. 4.
  Head strongly constricted at base. 5.

4. Middle coxæ not very prominent;	
Antennæ received in grooves.	(p. 393) MONOMMIDÆ.
Antennæ free;	
Thorax margined at sides; disk with basal impressions.	(p. 394) MELANDRYIDÆ.
Thorax not margined; disk not impressed at base.	(p. 401) PYTHIDÆ.
Middle coxæ very prominent; lateral suture of prothorax wanting.	(p. 404) ŒDEMERIDÆ.
5. Head prolonged behind and gradually narrowed.	(p. 405) CEPHALOIDÆ.
Head suddenly narrowed behind;	
Lateral suture of thorax wanting.	6.
Lateral suture distinct; base as wide as the elytra;	
Antennæ filiform;	
Hind coxæ laminiform.	(p. 406) MORDELLIDÆ.
Hind coxæ not laminiform.	(p. 399) *Scraptiini.*
Antennæ flabellate ♂, subserrate ♀.	(p. 424) *Evaniocerini.*
6. Tarsi perfect, with distinct claws; eyes normal;	
Prothorax at base narrower than the elytra;	
Hind coxæ not prominent.	(p. 409) ANTHICIDÆ.
Hind coxæ large, prominent;	
Claws simple; head horizontal.	(p. 413) PYROCHROIDÆ.
Claws cleft or toothed; front vertical.	(p. 415) MELOIDÆ.
Prothorax, at base, as wide as the elytra.	(p. 423) RHIPIPHORIDÆ.
Tarsi without claws; eyes pedunculated.	(p. 425) STYLOPIDÆ.

The only families not represented in our fauna are Trictenotomidæ and Nilionidæ. The first can hardly be placed in line in the series, and while obviously a member of it, a tendency is shown to recall certain Cerambycide as well as Cucujide characters. The Nilionidæ are well placed next the Pythidæ by Lacordaire, from which they differ by their almost hemispherical form and the fourth tarsal joint emarginate.

RHYNCHOPHORA.

This sub-order may be divided into three series, as has been done by Dr. LeConte, but as the typical modifications are but few, it would seem to serve a more useful purpose to present the families as a connected series. No extraneous material has been introduced, except Aglycideres, which we have placed as a separate family, nearly allied to Anthribidæ, but with strong Clavicorn tendencies. The Rhynchophora thus connect themselves by Aglycideres with the Clavicorns: by Rhinomaceridæ with Pythidæ; by Amycteridæ with Tenebrionidæ; by Scolytidæ with Bostrichinæ and the Serricorns, and finally by Anthribidæ with Lamiinæ.

Elytra with none, or very feeble fold on inner surface near the edge; ♂ and ♀ pygidium alike. 2.
Elytra with strong fold on inner face. 4.
2. Labrum wanting. 3.
Labrum distinct. (p. 427) RHINOMACERIDÆ.
3. Mandibles flat toothed on inner and outer sides. (p. 428) RHYNCHITIDÆ.
Mandibles stout, pincer-shaped. (p. 431) ATTELABIDÆ.
4. Pygidium of male divided. 5.
Pygidium of both sexes undivided. 7.
5. Tarsi usually dilated, brush-like beneath. 6.
Tarsi setose, gular margin elevated, prosternum excavated. (p. 432) BYRSOPIDAE.
6. Mandibles with deciduous piece, leaving scar. (p. 433) OTIORHYNCHIDÆ.
Mandibles without accessory piece. (p. 458) CURCULIONIDÆ.
7. Pygidium normal, covered or uncovered, tibiæ not serrate. 8.
Pygidium surrounded at edge by elytra; tibiæ usually serrate. (p. 512) SCOLYTIDÆ.
8. Antennæ geniculate; labrum wanting, last spiracle not visible. (p. 503) CALANDRIDÆ.
Antennæ straight, 10–11-jointed; labrum distinct; last spiracle uncovered. (p. 525) ANTHRIBIDÆ.

The foreign families having no representatives in our fauna are, besides Aglycideridæ, differing from Anthribidæ by pygidium covered, and tarsi stouter, not brush-like beneath: Amycteridæ, found in Australia, differing from Byrsopidæ by prosternum not excavated, and also by the last abdominal segments deformed and excavated: Brachyceridæ belong to the Mediterranean fauna, and have the mentum very large, mandibles without deciduous piece, and narrow setose tarsi. Belidæ, from South America, have the body narrow and Lixus-like in form, the ventral segments of equal length, and two small apical tibial spurs.

The habits of these insects are varied, but with the exception of Brachytarsus, which is said* to live on Coccidæ, the food is vegetable, on the leaves, under bark, and in woody parts and stems of plants; a very small number, Apion and Coccotorus in seeds. Certain Erirhinini are subaquatic, and have a waterproof covering.

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* Lacordaire, Gen. Col., vii. 481.

CLASSIFICATION

OF THE

COLEOPTERA OF NORTH AMERICA.

FAM. I.—CICINDELIDAE.

MENTUM deeply emarginate; ligula small, concealed; base of labial palpi free.

Maxillæ with the outer lobe biarticulate, the inner usually terminated by an articulated hook.

Antennæ inserted on the front, above the base of the mandibles.

Prothorax with the epimera and episterna distinct.

Metasternum pointed behind.

Abdomen with the three anterior segments connate; 6-articulated in the female, usually 7-articulated in the male.

Legs slender, formed for running; posterior coxæ dilated internally, not reaching the sides of the body; tarsi 5-jointed.

The species composing this family are the most predaceous of Coleoptera, and in some of them activity as well as brilliancy of coloring is carried to its greatest perfection. The genera found in the United States are all terrestrial, but within the tropics are many which alight only on leaves of trees. More full descriptions of the habits will be given below, under the particular groups.

The head is large; the mandibles long and sharply toothed; the maxillæ have two lobes; the interior is armed with spines on its inner margin, and in our genera is terminated by an articulated hook, which is wanting in some foreign genera; the mentum is large, deeply emarginate with the lateral angles acute, armed in the middle with a large acute tooth, and is separated from the gula by a distinct suture; there is also a distinct lateral suture, running from the lower side of the genæ backwards, separating the pleuræ of the cranium from the upper piece or notum; this suture exists in Carabidæ in a feeble degree only in some Broscini; the ligula is small, hidden under the mentum tooth; the base of the labial palpi is free and prominent, appearing like a separate joint.

The antennæ are inserted upon the front, above the mandibles; they are always 11-jointed, with the four inferior joints glabrous and polished, the others pubescent; they are usually filiform, rarely thickened externally.

The thorax is usually cordate, sometimes cylindrical, rarely quadrate; the dorsal surface is marked by an anterior and posterior transverse impression, and a dorsal line connecting the two transverse impressions; the lateral margin is not so well defined as in most of the genera of the next family; the prosternum is narrow, not produced behind; the episterna and epimera are distinctly defined by sutures, and the anterior coxæ are globular, with the cotyloid cavities entire.

The mesosternum is obliquely declivous, deeply emarginate behind; the epimera and episterna are sometimes connate, without suture, and sometimes distinct; in the latter case the suture runs diagonally, and the epimera extend to the middle coxæ, which are globular.

The metasternum is pointed in front and behind, sometimes reaching the middle of the second ventral segment; the epimera are large in the winged species, small in the apterous ones; the episterna are small, and frequently indistinct. The posterior coxæ are triangular, dilated, and prominent internally, concave behind for the motion of the thighs; they do not extend to the sides of the body, but are inclosed by the side pieces of the metathorax, and the first ventral segment.

The elytra cover the upper surface of the trunk and dorsal segments, and are rounded at the tip; sometimes they are connate, and sometimes (as in Amblychila) embrace widely the flanks of the abdomen; the wings are usually well developed, sometimes wanting; epipleuræ narrow, distinct.

The legs are slender, usually long; the tibiæ have two distinct terminal spurs; the tarsi in our genera are filiform, the first three joints of the anterior ones of the male usually dilated, and densely clothed with hair beneath. The claws are acute, and simple.

The abdomen is composed in the female of six ventral segments; in the male the sixth segment is usually deeply emarginate, and a small seventh segment is thus seen, but in Amblychila the abdomen is alike in both sexes; the three anterior segments are closely connate, the first is visible only on the sides, the second is acute in the middle, and reaches the point of the metasternum; the others are movable. The dorsal segments, as first observed by Dr. Schaum, are eight in the male and seven in the female, the seventh in the latter sex being elongated so as to conceal the eighth.

This family is divided by Lacordaire into five tribes, of which but three are found within the limits of the United States, and may be distinguished in the following manner:—

Posterior coxæ separated; eyes small.	MANTICORINI.
Posterior coxæ contiguous; eyes large, prominent.	
Third joint of maxillary palpi longer than the fourth.	MEGACEPHALINI.
Third joint of maxillary palpi shorter than the fourth.	CICINDELINI.

Tribe I.—MANTICORINI.

The species of this tribe are apterous, with the elytra connate; the eyes are small, and in this respect they differ from all other members of the family; the first joint of the labial palpi is very short, and hardly extends beyond the emargination of the mentum.

These insects are nocturnal in their habits, Dr. H. A. Brous informs us that Amblychila is rarely to be seen until after sunset, and not during cold or blustering nights; during the day they hide in holes, rarely under rubbish on the ground. Omus is found during the day under any object affording suitable shelter. In Amblychila the anterior tarsi of the male are not dilated, the posterior trochanter is, however, acute at tip, and in the female obtuse. In Omus the anterior tarsi of the male are widely dilated, and the seventh ventral segment distinct.

Two genera of this tribe occur in our country, and both are peculiar to it. *Amblychila* having the sides of the elytra widely inflexed, thorax scarcely margined, and terminal joint of maxillary palpi shorter than the third. It is represented by one species found in Kansas, New Mexico, and Arizona.

Omus has the elytra narrowly inflexed, thorax distinctly margined, and the last two joints of maxillary palpi subequal. Nine species from California, Oregon, and Washington Territory have thus far been described.

Tribe II.—**MEGACEPHALINI.**

The native species of this tribe are but two in number, and belong to the genus Tetracha. *T. virginica* is crepuscular in its habits; *T. carolina* extends from the Atlantic to the Pacific coast.

Tribe III.—**CICINDELINI.**

Of this tribe the species are very numerous. Those of our fauna belong to Cicindela, and many of them are seen on roads exposed to the sun, flying actively on the least alarm, and again alighting at the distance of a few paces. The species are more numerous in the temperate and warm regions of the country, and gradually disappear towards the north, until in the latitude of Lake Winnipeg but two or three species remain.

The larvæ of Cicindelidæ, like the perfect insects, live in holes, which they excavate with their jaws and feet, in sandy or clayey localities, using, as stated by Westwood, their broad head for bringing the particles to the surface. They are whitish grubs, with a large, flat, metallic-colored head, and long-toothed mandibles; the prothoracic segment is protected above by a large, lunate, corneous scute; the ninth segment has two dorsal hooks; the tarsi are terminated by two claws. They lie in wait for prey at the mouth of the burrow, the head and thorax closing the opening, and seize with the long mandibles any insect which approaches within reach.

Fam. II.—**CARABIDAE.**

Mentum deeply emarginate; ligula more or less prominent, with more or less distinct paraglossæ.

Maxillæ with the outer lobe palpiform, usually biarticulate, the inner usually curved, acute, ciliate or with spines.

Antennæ inserted behind the base of the mandibles, under a frontal ridge.

Prothoracic epimera and episterna usually distinct.

Metasternum pointed behind, rarely meeting the second ventral segment.

Abdomen with the three anterior segments connate; usually with six, rarely (Brachinini) with seven or eight ventral segments; the first visible only at the sides.

Legs slender, formed for running; anterior and middle coxæ globular, posterior dilated internally, not attaining the sides of the body (except in Trachypachini); tarsi 5-jointed.

One of the most numerous families of Coleoptera, and generally predaceous in character, although some species of Amara, Zabrus, and Harpalus also use vegetable food. The larva of *Omophron labiatum* is sometimes destructive to young corn in our Southern States.

Numerous efforts have been made to indicate a rational distribution of the genera, and the attempts commenced by Latreille and Bonelli, successively improved by the suggestions of Dejean, Erichson, Schiödte, Lacordaire, Le Conte, and Schaum, have been recently revised by Dr. Horn, and assumed a more satisfactory form.

Following, then, the suggestions of the last author, the whole family may be divided into three series, which may be termed sub-families.

Middle coxal cavities not entirely inclosed by the sterna, the epimeron of the mesosternum reaching the coxa. CARABINÆ.
Middle coxal cavities entirely inclosed by the sterna, the epimeron not reaching the coxa.
  Head without antennal grooves beneath, and supra-orbital distinct setæ. Ambulatorial setæ of abdomen usually well developed. HARPALINÆ.
  Head with distinct, usually long, antennal grooves beneath, and without distinct supra-orbital setæ. Ambulatorial setæ of abdomen feeble or wanting. PSEUDOMORPHINÆ.

Sub-Family I.—CARABINAE.

Middle coxal cavities not entirely inclosed by the sterna; the intervening space occupied by the mesosternal epimera. Head with one or two supra-orbital setigerous punctures. Sides of prothorax usually with two setigerous punctures. Anterior tibiæ either entire, obliquely grooved, or emarginate; the spurs are either both apical, or the inner one is more or less distant from the extremity.

In this sub-family are contained nearly all the anomalous forms of Carabidæ. They consequently may be arranged in several tribes, among which are to be found the osculating points with the preceding and following families, as well as the direct lines of affinity with the second and third sub-families. No general characters except those above given will apply to all of them, but the special characters of the tribes found in the United States may be thus expressed:—

- Posterior coxæ attaining the side margin of body. Anterior coxal cavities open behind. Mandibles with setigerous puncture. II. TRACHYPACHINI.
- Posterior coxæ not attaining the side margin of body.
  - Anterior coxal cavities open behind.
    - Posterior coxæ separated. Labrum bifurcate. III. CYCHRINI.
    - Posterior coxæ contiguous. Labrum not bifurcate.
      - Mandibles without setigerous puncture externally. IV. CARABINI.
      - Mandibles with setigerous puncture. VII. NEBRIINI.
  - Anterior coxal cavities closed behind.
    - Prosternum prolonged and dilated, entirely concealing the mesosternum. Mandibles with setigerous puncture. Scutellum entirely concealed. I. OMOPHRONINI.
    - Prosternum not concealing the mesosternum.
      - Antennæ free at base.
        - Mandibles without setigerous puncture. Anterior tibiæ strongly emarginate. One supra-orbital seta. VI. LORICERINI.
        - Mandibles with setigerous puncture. Anterior tibiæ feebly emarginate. Two supra-orbital setæ. V. ELAPHRINI.
      - Antennæ arising either under a distinct frontal plate or a ridge which extends backward over the eyes.
        - Body not pedunculate. Posterior coxæ separated. Prosternum prolonged at tip. Mandibles with seta. VIII. METRIINI.
        - Body pedunculate, bases of thorax and elytra remote.
          - Posterior coxæ separated.
            - Anterior tibiæ emarginate within, the inner spur remote from the outer. IX. PROMECOGNATHINI.
          - Posterior coxæ contiguous.
            - Anterior tibiæ emarginate within, the outer apical angle prolonged. X. SCARITINI.

Tribe I.—OMOPHRONINI.

This tribe consists of but a single genus, remarkable for its round convex form and the absence of scutellum.

Antennæ slender, inserted under a slight frontal margin, four basal joints glabrous. Eyes round, moderately prominent, distant beneath from the buccal opening. Head deeply inserted, with one supra-orbital seta. Labrum short, emarginate. Mandibles not prominent, arcuate, acute at tip, simple within or slightly toothed near the base, outer side slightly concave with a setige-

Tribe II.—**TRACHYPACHINI.**

Antennæ moderate, arising under a distinct frontal margin, the joints all glabrous with a few hairs near the tip of each, first joint stout but short, third very little longer than the second. Eyes oval, not prominent, moderately distant from the buccal fissure. Head deeply inserted in the thorax, with two supra-orbital setæ. Mandibles stout, arcuate, concave on the outer side and with a setigerous puncture. Maxillæ with inner lobe stout, falciform, ciliate and spinous within, outer lobe rather stout, with two equal joints, palpi stout, the second and fourth joints equal, the third a little shorter. Mentum short, broad, with distinct suture at base, anteriorly feebly emarginate with an emarginate tooth. Ligula broad, rounded and bisetose at tip, the paraglossæ membranous, obtuse at tip, slightly longer than the ligula, the palpi short, the second joint with one seta in front, the third elongate-oval. Thorax with three setigerous punctures at the sides. Body not pedunculate, scutellum distinct. Elytra not margined at base, sides narrowly inflexed. Prosternum horizontal at tip prolonged behind the coxæ, the coxal cavities open behind, prosternal sutures indistinct. Mesosternum oblique and with a carina in front between two fossæ which receive the anterior coxæ. Metasternal epimera invisible, the posterior coxæ contiguous within and reaching the side of the body separating the metasternal side pieces and the abdomen. Legs not long, femora stout, middle and posterior tibiæ spinous externally, anterior tibiæ spinous posteriorly, gradually stouter to tip, sulcate and feebly emarginate, the inner spur above the tip.

The anterior tarsi of the male have two joints feebly dilated and spongy pubescent beneath.

This tribe contains two genera *Trachypachys* and *Systolosoma*, the former occurring in our fauna and Europe, the latter in Chili.

The characters above given show such an apportionment of those peculiar to the sub-family, with the addition of one not found in any of the tribes of Carabidæ, that it is difficult to say in which direction the affinities are most marked, but those toward the Nebriini and Elaphrini seem to be the most evident.

The form of the posterior coxæ is the character more especially noteworthy in this tribe. These members are not of unusual dimensions but extend to the margin of the body; their line of contact with each other is also greater than is usual in the entire family.

Two species of Trachypachys occur in our fauna, T. inermis *Motsch.* distributed from the Hudson Bay region to New Mexico, and T. Gibbsii *Lec.* in Washington Territory and Oregon.

rous puncture. Maxillæ slender, inner lobe hooked at tip, spinulose within, outer lobe slender, biarticulate, palpi slender, the last two joints equal. Mentum deeply emarginate and with an acute tooth, ligula truncate and slightly broader at tip and bisetose, the paraglossæ free at tip but not longer, the palpi slender, second joint longer than the terminal and plurisetose in front. Thorax applied directly against the base of the elytra, sides with a single setigerous puncture a little behind the middle. Scutellum invisible. Elytra convex, margined at base, sides narrowly inflexed, margin continuous. Prosternum rather widely separating the coxæ, prolonged and dilated behind them and completely covering the mesosternum; the coxal cavities closed behind. Mesosternum in front vertical and carinate, with two fossæ to receive the under side of the anterior coxæ. Metasternum short, epimera not distinct, posterior coxæ contiguous. Tibiæ finely spinulose externally, the anterior slightly broader to tip, within obliquely grooved, the inner spur above the apex. Tarsi slender.

The males have one or two joints of the anterior tarsi dilated and spongy pubescent beneath.

The plurisetose second joint of the labial palpi is a character of extremely rare occurrence in the present sub-family, but it is the usual structure in Cicindelidæ, and is very constant in Dryptini and Harpalini of the sub-family Harpalinæ.

The species are found in wet sand, near the margin of streams or ponds; four are found on the Pacific, five on the Atlantic slope of the continent.

Tribe III.—**CYCHRINI.**

Antennæ slender, setaceous, four basal joints glabrous (two only in *Nomaretus*), inserted under a feeble frontal ridge; first joint long and often stout, third longer than second. Eyes round, moderately prominent, distant beneath from the buccal opening. Head more or less constricted, with one setigerous puncture above the eye, neck often semiglobose. Labrum deeply bifurcate. Mandibles long and prominent, arcuate and acute at tip, and at least bidentate within, and with no setigerous puncture externally. Ligula acute and bisetose at tip, the paraglossæ variable. Labial palpi long, the second joint elongate, plurisetose in front, last joint securiform and concave. Maxillæ with inner lobe slender, hooked at tip, ciliate or spinous within, the outer lobe stout with the terminal joint longer, the palpi long and slender, the last joint securiform and concave. Mentum deeply emarginate without tooth. Thorax variable in form with a lateral and antebasal setigerous puncture. Body not pedunculate, scutellum scarcely evident. Elytra not margined at base, sides rather widely inflexed, margin acute and not interrupted. Prosternum usually not prolonged behind the coxæ, the tip obtuse, the coxal cavities open behind. Mesosternum nearly vertical and obtusely carinate in front. Metasternal epimera not distinct. Posterior coxæ separated by a triangular process of the abdomen. Legs long, usually slender, the femora usually very feebly clavate. Anterior tibiæ very slightly broader to apex, grooved within near the apex, the spurs terminal but placed slightly obliquely to each other. Tarsi slender, the first joint long, the fourth entire; anterior tarsi usually dilated in the males with a variable number of joints spongy pubescent beneath.

The separation of the posterior coxæ which seems to have escaped notice here as well as in several of the following tribes is a character of too great importance to neglect. It is repeated in *Metrius*, *Promecognathus*, and *Enceladus*, but there exists too wide an interval between the Cychrini and these genera for us to suggest any special affinity with either of them. With the Carabini the Cychrini appear to have the closest relationship.

Two genera form this tribe, both represented in the United States, and the second peculiar to the Atlantic slope.

Antennæ with four basal joints glabrous.	**Cychrus.**
Antennæ with two basal joints glabrous.	**Nomaretus.**

Cychrus as above defined is rather polymorphic and is capable of division into parts which rank rather as sub-genera than genera. Those occurring in our fauna have been the subject of a study by Dr. Horn in which these divisions have been treated in sufficient detail (Trans. Amer. Ent. Soc. 1878, pp. 168–185).

Two important divisions may however be noticed, those in which the anterior tarsi are similar in the sexes and slender, and those with the anterior tarsi dilated in the males. To the first of these series belong some European species and three in our own fauna which occur west of the Rocky Mountains. Those with dilated tarsi are peculiar to our fauna. These two series seem to bear the same relationship to each other that *Damaster* does to *Carabus*.

In *Nomaretus* and one group of *Cychrus* (Sphæroderus), the tip of the prosternum is somewhat prolonged.

Tribe IV.—**CARABINI.**

Antennæ slender, with four basal joints glabrous, arising under a feeble frontal ridge. Eyes round, moderately prominent and distant beneath from the buccal opening. Head not constricted behind the eyes, with but one supra-orbital setigerous puncture. Labrum broad and emarginate. Mandibles stout, arcuate, acute at tip, concave on the outer side and without setigerous puncture. Mentum broad, emarginate, with a variable tooth. Ligula variable, the paraglossæ distinct. Maxillæ with inner lobe strongly hooked, densely ciliate within, outer lobe stout. Palpi moderate or long, last joint of both pairs securiform. Thorax with a setigerous puncture at the side and one also near the posterior angle. Body not pedunculate, scutellum small. Elytra feebly embracing the sides of the body, the lateral margin continuous. Prosternum horizontal at tip and prolonged, the anterior coxal cavities open. Mesosternum nearly vertical and subcarinate in front. Metasternal epimera invisible, posterior coxæ contiguous. Anterior tibiæ gradually broader to tip, slightly grooved within, the spurs terminal but placed obliquely to each other. Femora moderate, the anterior stouter. Middle and posterior tarsi long and slender, the anterior shorter.

In the males the anterior tarsi are dilated and densely pubescent beneath, the dilated joints variable in number, simple in both sexes in *Damaster*, a Japanese genus.

This tribe is composed of species of at least medium or even of large size, remarkable for the most part for their beauty of form, color, and sculpture.

Within our faunal limits but two genera occur, separated by the form of the third antennal joint.

Third joint of antennæ cylindrical.	**Carabus.**
Third joint of antennæ compressed.	**Calosoma.**

In the number of species these genera in our fauna reverse that of Europe where *Carabus* is far more numerous than

Calosoma; with us the latter genus has the greater number of species but the disparity between the genera is not so great as in Europe.

Tribe V.—ELAPHRINI.

Antennæ moderate in length, rarely longer than head and thorax, three basal joints glabrous, the fourth pubescent at tip or entirely glabrous in *Diachila*, base free, a slight ridge in *Blethisa*. Eyes round, usually prominent, moderately distant from the buccal fissure. Front more or less deflexed, with two supra-orbital setæ. Labrum moderate, truncate. Mandibles stout, concave externally, with a setigerous puncture, arcuate, acute at tip. Maxillæ hooked at tip, ciliate or spinulose externally, outer lobe slender, biarticulate; palpi moderate in length, terminal joint longer than the preceding. Mentum emarginate with a bifid or emarginate tooth, ligula free at tip, bisetose, acute in *Elaphrus*, broad in the other genera, paraglossæ slender, longer than the ligula, the palpi moderate, the last two joints equal, the penultimate bisetose in front, except in *Diachila*. Thorax variable in form, the seta in the posterior angle always present, the lateral absent in most *Elaphrus*. Body not pedunculate, scutellum distinct. Elytra not margined at base except feebly near the humeri in *Blethisa*, sides narrowly inflexed, margin entire. Prosternum obtuse at tip not prolonged behind the coxæ, the coxal cavities closed. Mesosternum not prominent. Metasternal epimera not distinct, the posterior coxæ contiguous. Legs moderate. Middle and posterior tibiæ slightly spinulose externally, the anterior obliquely grooved, the inner spur above the apex. Tarsi slender.

The genera are separated in the following manner:—

Mentum tooth large, nearly as long as the lateral lobes, emarginate.
Thorax without lateral seta. Elytra with variolate foveæ, not striate. **Elaphrus.**
Mentum tooth short, bifid at tip. Thorax with lateral setigerous puncture.
Head not sulcate, elytra with feeble striæ of punctures. **Diachila.**
Head with deep lateral grooves, elytra striate with interstrial foveæ. **Blethisa.**

Elaphrus.—The affinities existing between this genus and *Opisthius* will be referred to in the proper place. It is remarkable that the lateral seta of the thorax is absent in all the species of this genus except *viridis* Horn, which is the only one in our fauna with the thorax wider than the head including the eyes. In the larger species the males have four joints of the anterior tarsi dilated, in the smaller but three.

DIACHILA.—Two species occur in our fauna, *arctica* Gyll., common to both Europe and America, and *subpolaris* Lec., from Hudson's Bay. The anterior tarsi of the male have four dilated and spongy pubescent joints, and in *subpolaris* the middle femur has a small tooth near the base.

BLETHISA.—Four joints of the anterior tarsi are slightly dilated and spongy pubescent beneath in the male, and in *quadricollis* Hald., the anterior femora have an acute tooth beneath.

Tribe VI.—**LORICERINI.**

Antennæ slender, base free, first four joints glabrous, first joint elongate, third longer than second, joints 2–6 with long bristles in front. Eyes round, prominent. Head with a distinct neck and one supra-orbital seta. Labrum moderately prominent, arcuate in front. Mandibles thin, curved, acute at tip, without setigerous puncture. Maxillæ with a moderate foliaceous expansion at base which bears long ciliæ, inner lobe hooked at tip, sparsely ciliate within, outer lobe with slender joints, palpi slender, the last joint longer than the preceding and acute. Mentum moderately emarginate with an obtuse tooth, basal suture distinct. Ligula not prominent, slighly prolonged in front and bisetose, the paraglossæ adherent in their entire length and not longer; the palpi slender, the last two joints nearly equal, the penultimate bisetose in front. Thorax transversely cordate, with a single setigerous puncture at the side behind the middle. Body not pedunculate, scutellum distinct. Elytra margined at base, sides narrowly inflexed, lateral margin entire but with a distinct internal plica. Prosternum not prolonged behind, the anterior coxal cavities closed. Mesosternum oblique, not carinate in front. Metasternal side pieces distinct, the suture between them well marked, posterior coxæ contiguous. Legs slender, middle and hind tibiæ spinulose externally, anterior tibiæ deeply emarginate within, the inner spur remote from the apex. Tarsi slender.

The anterior tarsi of the male have three joints rather broadly dilated and densely spongy pubescent beneath.

This tribe contains but one genus *Loricera*, in our fauna, with which *Elliptosoma* Woll., a Maderan form, has been associated. This is said to differ in the absence of metasternal epimera in the former and their presence in the latter, but in all the specimens of *Loricera* examined the sutures between the episterna and epimera are quite distinct.

Associated for a time with the Panagæides, Loricera has been removed by LeConte, followed by Schiödte, Schaum, and Chaudoir. While it must be considered a member of the present sub-family allied to the Elaphrini and Nebriini, it presents two striking characters at variance with all the tribes of Carabinæ and which approach it to the Harpalinæ, the deeply emarginate anterior tibiæ and the presence of the internal elytral plica which is so well marked in Pterostichini and Panagæini.

Tribe VII.—**NEBRIINI.**

Antennæ with four basal glabrous joints, inserted under a slight frontal plate which is not extended backward over the eyes in a supra-orbital ridge. Eyes round, moderately or very prominent, distant from the buccal opening beneath, less however in *Leistus* and *Notiophilus*. Head horizontal (front deflexed in *Opisthius* and with two supra-orbital setæ), and with one supra-orbital seta. Parts of mouth variable, mandibles always with setigerous puncture. Thorax usually with a setigerous puncture at the side and hind angle; both are absent in *Opisthius*, and the posterior in *Leistus*. Elytra margined at base except in *Opisthius*, sides narrowly inflexed, margin entire. Prosternum horizontal and prolonged behind the coxæ, the cavities open behind; lateral suture of thorax beneath normally distant from the margin except in *Opisthius*. Mesosternum carinate in front. Metasternal epimera indistinct, posterior coxæ contiguous. Legs slender, middle and posterior tibiæ spinulose or ciliate externally. Tarsi slender, ciliate beneath.

In *Notiophilus* the anterior tibiæ are very obliquely truncate, the inner spur above the apex. In the other genera both spurs are terminal but placed slightly obliquely to each other.

The genera which occur in our fauna belonging to this tribe are as follows:—

Front deflexed, head with two supra-orbital setæ, spurs of anterior tibiæ terminal. Elytra with ocellate foveæ, not margined at base. **Opisthius.**

Front horizontal, head with one supra-orbital seta. Elytra margined at base.
  Anterior tibiæ very obliquely truncate, the inner spur above the apex; vertex sulcate. **Notiophilus.**
  Anterior tibiæ scarcely obliquely truncate, spurs terminal.
    Mandibles explanate at the sides, maxillæ at base with spine-bearing processes. **Leistus.**
    Mandibles stout, not explanate, maxillæ without processes and merely setose at base.
      Anterior tarsi of male feebly dilated. **Nebria.**
      Anterior tarsi of male broadly dilated. **Pelophila.**

In addition to the peculiarities already mentioned it might be observed that all the genera above mentioned (except *Notiophilus*) place their antennæ backward over the body in a more or less curved position when in repose, while in *Notiophilus* the antennæ are bent down under the head and encircle the margin of the eye.

The affinities of this tribe are more marked in the direction of the Elaphrini than elsewhere, and it may be especially observed that while all those characters which separate *Opisthius* from the other genera are found in *Elaphrus*, the ligula and paraglossæ of these two genera are also similar.

Tribe VIII.—METRIINI.

Antennæ moderate in length, straight, arising under a distinct frontal margin; first four joints glabrous, the first joint stouter but not longer than the third, 5–11 subequal, pubescent. Eyes small, round, distant beneath from the buccal opening. Head with a single setigerous puncture over the middle of each eye. Labrum short, feebly bisinuate. Mandibles short, concave on the outer side and with a distinct setigerous puncture. Mentum transverse, broadest at middle, deeply emarginate and with a rather stout, bifid tooth; epilobes distinct, mental suture well marked. Ligula broad, obtuse and bisetose at tip, the paraglossæ distinct and adherent in their entire length; palpi rather stout, the last two joints of nearly equal length, the second bisetose in front, the third broader to apex and truncate. Maxillæ with inner lobe rather short, distinctly hooked at tip and ciliate internally, the outer lobe biarticulate and with equal joints; palpi rather stout, the terminal joint nearly as long as the second, gradually broader to tip and obtuse. Thorax transverse, a seta at point of greatest width, another in front of the hind angles. Bases of thorax and elytra in close apposition, scutellum indistinct. Elytra not margined at base, moderately inflexed at the sides, the margin acute and entire. Anterior coxal cavities closed behind, prosternum slightly prolonged and partly covering the declivous and flat mesosternum. Femora moderately stout, the anterior scarcely thicker. Anterior tibiæ obliquely grooved and emarginate near the apex, both spurs terminal. Middle tibiæ ciliate externally. Posterior coxæ separated by a rather broad triangular process of the abdomen. Tarsi moderate, first joint longer than either of the three following, fourth not emarginate. The first joint of the anterior tarsus of the male is rather broadly dilated and with the second is densely spongy pubescent beneath.

The metasternal side pieces of which no mention is made above are sometimes simple, that is, with all trace of suture between the episternum and epimeron obliterated, or the suture may be more or less distinct and the side pieces consequently double.

This tribe contains but a single Californian species (*Metrius contractus* Esch.), of singular form, found under stones in forests. It is a very distinct type, the affinities of which are not easy to define. The posterior coxæ being separated, a relationship seems to be indicated with the Promecognathini and Cychrini, especially with the latter by the more widely inflexed sides of the elytra, but it differs widely from either by the structure of the anterior tibiæ. The presence of a setigerous puncture on the mandible is a very curious addition to the other characters, and is in nearly if not quite all other cases associated with riparial habits, which cannot be said of Metrius.

The genus *Metrius* is placed by Schaum in the preceding tribe, which he defines as having the mesosternum carinate in front. Such is not the case with this genus, which it therefore becomes necessary to remove. It cannot certainly enter any other tribe known to us, and Dr. LeConte was therefore compelled to separate it as distinct.

Tribe IX.—PROMECOGNATHINI.

Antennæ feebly geniculate, arising under a slight frontal margin; first four joints glabrous, the first much larger and stouter than the others, 5–11 slightly compressed and finely pubescent. Eyes small, slightly oval and distant from the buccal opening. Head with two supra-orbital setæ, neck slightly broader behind the eyes. Labrum short, bisinuate. Mandibles elongate, arcuate and acute at tip and decussating, not toothed within. Mentum short, broad, broadly emarginate and with a broad short tooth, epilobes narrow but distinct, mental suture distinct. Gula deeply transversely impressed, so that the mentum is inserted at a right angle to the peduncle. Ligula moderately prominent, narrower and free at tip, truncate, with two setæ; paraglossæ long, rather slender and ciliate within at the tip. Maxillæ with inner lobe slender and long, obtuse at tip, densely ciliate within, outer lobe biarticulate, the terminal joint much shorter. Maxillary palpi moderately long, the second joint equal to the next two together, terminal joint broader at tip, truncate and twice the length of the third. Labial palpi with the last two joints about equal in length, the terminal broader at tip and truncate, the preceding bisetose in front. Thorax narrowed at base, sides narrowly inflexed, lateral margin distinct, a setigerous puncture near the hind angle and three at the side in front. Body pedunculate, scutellum invisible. Elytra not margined at base, lateral margin distinct and entire, sides narrowly inflexed. Anterior coxal cavities closed behind, prosternum not prolonged, mesosternum declivous. Metasternal epimera indistinct. Femora stout, the anterior more strongly clavate. Anterior tibiæ gradually broader to tip, smooth externally, deeply emarginate internally, the inner spur remote from the tip. Posterior coxæ separated by a triangular process of the abdomen which meets the metasternum. Tarsi moderate, the posterior longer, first joint moderately long, fourth slightly emarginate. Tarsi similar in the sexes.

The present genus was associated by Chaudoir with *Stomis*, with which it has no character in common, except the elongate mandibles; Lacordaire has adopted the group Stomides as established by Chaudoir; Schaum placed it in the group Broscidæ,* from which, however, it departs both by the concealed epimera of the metathorax, and by the epimera of the mesothorax reaching the coxæ. To us it seems most natural to consider it as the passage from the preceding to the following tribes. Two species occur in California under stones, in mountain regions.

Tribe X.—**SCARITINI.**

Antennæ moderate in length, inserted under a frontal plate with a variable number of glabrous joints. Eyes comparatively small, very finely granulate and distant from the buccal opening (Scarites), or normally convex and granulate, and not distant from the mouth (Clivinæ). Head variable in form and with one (Scarites), or two (Clivinæ) supra-orbital setæ. Labrum short, emarginate or sinuate. Mandibles at least moderately prominent, without setigerous puncture, simple or dentate. Maxillæ with the inner lobe often obtuse at tip, in some genera normally hooked, ciliate or spinulose within, outer lobe biarticulate, the terminal joint usually shorter; palpi variable in form. Mentum emarginate, often deeply; the tooth variable in size, epilobes narrow, but very wide in *Schizogenius*. Ligula either broad and large (Scarites) or small and prolonged (Clivinæ), the tip narrow and bisetose, except in *Pasimachus* in which it is but little prominent at middle and with the two setæ very closely approximated, paraglossæ usually slender and longer than the ligula, spinulose within in the Scarites. Palpi moderate, terminal joint variable in form, shorter than the penultimate (Scarites) equal or longer (Clivinæ), the penultimate bisetose in front (Clivinæ), plurisetose (Scarites) Thorax variable in form, hind angles rarely prominent; side margin with a setigerous puncture in the hind angle (Scarites), or with two lateral punctures (Clivinæ). Body pedunculate, scutellum not visible between the elytra. Elytra rarely slightly margined at base, sides narrowly inflexed, margin entire, except in *Ardistomis* where there is a distinct interruption posteriorly and an internal plica. Prosternum not prolonged behind the coxæ, the cavities closed behind. Mesosternum vertical, not carinate in front. Metasternal epimera not visible in *Pasimachus*, more or less distinct in all the other genera. Posterior coxæ contiguous. Legs stout, more or less fossorial, the anterior femora especially stout. Middle and posterior tibiæ ciliate or spinulose externally but often very finely, anterior tibiæ palmate, the outer apical angle prolonged, inner side deeply emarginate with the inner spur above the emargination. Tarsi slender.

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* But has corrected this error on a subsequent page; *vide* Ins. Deutschl., I, 773.

From the above characters it is evident that the tribe must be sub-divided into two groups in the following manner:—

Basal joint of antennæ long. Mentum broad, concealing at the sides the base of the maxillæ. Head with one supra-orbital setigerous puncture, thorax with one setigerous puncture at the hind angle. SCARITES.

Basal joint of antennæ not elongated. Base of maxillæ not covered by the mentum. Head with two supra-orbital setigerous punctures, sides of thorax with two. CLIVINÆ.

In addition to the above characters the form of the labial palpi and the paraglossæ give additional means of separating the groups.

The sexual characters of the genera of this tribe are very feeble. In *Scarites* the last ventral segment has four marginal punctures, in the female the inner two are more distant from each other than from the outer, while in the male they are equidistant. In *Pasimachus* some species have the posterior tibiæ pubescent within at tip in the male. There are no marginal punctures on the last ventral segment, in the males there will usually be observed on each side one ante-apical puncture and in the females two, but these are not constant in any respect.

In the Clivinæ the last segment is the same as in *Scarites*, the tarsi are often alike slender in both sexes, but when dilated are more so in the male. In *Dyschirius* the palpi differ as will be seen below.

The antennæ vary in the number of glabrous basal joints, the Scarites have four and the Clivinæ two. In *Aspidoglossa* the base of the third is glabrous, but even here, as in all the Clivinæ, the second joint though not pubescent is hairy.

Group **Scarites.**

In our fauna two genera occur separated in the following manner:—

Hind angles of thorax distinct. Elytra with humeral carina of variable length. Maxillæ very obtuse at tip. **Pasimachus.**

Hind angles of thorax wanting. Elytra without humeral carina. Maxillæ slightly hooked at tip. **Scarites.**

In these two genera the four basal joints are glabrous and in repose the scape is received in a depression beneath the eye.

These are insects of moderate or large size, found under stones, or (*Pasimachus elongatus* Lec.) running on the ground. The genus *Pasimachus* is confined to North America; most of the species are margined with blue.

Group **Clivinæ**.

The genera which occur in our fauna are as follows:—

Margin of elytra entire. Mandibles flat and arcuate.
  Anterior tarsi slender in both sexes.
    Palpi dissimilar in the sexes, the terminal joint more dilated in the male, excavated beneath with a large sensitive space. Thorax globose or globose-oval. **Dyschirius.**
    Palpi similar in the sexes, not dilated nor excavated in the male. Thorax more or less quadrate. **Clivina.**
  Anterior tarsi more or less dilated in both sexes.
    Mentum feebly emarginate. Head not grooved. **Aspidoglossa.**
    Mentum deeply emarginate. Head with numerous longitudinal grooves. **Schizogenius.**
Margin of elytra interrupted posteriorly and with an internal plica. Mandibles slender, prolonged not arcuate. Anterior tarsi of both sexes rather widely dilated. **Ardistomis.**

In all our genera the ligula is small and is usually hidden by the supports of the labial palpi. The ligula is slender, the tip more or less acute, free and bisetigerous, the paraglossæ slender and acute, not longer than it. *Clivina* and *Dyschirius* are best separated by the form of the palpi; all other characters heretofore given fail in our series of species.

The species are of small size, mostly found in moist places, though some occur under bark of trees.

It is curious in this tribe that *Ardistomis* should have the elytral margin interrupted with an internal plica. It thus shows much more affinity with the Harpalinæ than do the other genera, and seems to be the nearest Carabine relation of the Panagæini, instead of the Cychrini as suggested by most authors.

Sub-Family HARPALINÆ.

Middle coxal cavities entirely inclosed by the central pieces of the meso- and metasternum, the epimera not attaining the coxæ. Head with setigerous punctures over the eyes. Thorax with setigerous punctures at the side and posterior angle, very rarely without the latter, and still more rarely without either. Anterior tibiæ always either obliquely sinuate or deeply emarginate within, the inner spur remote from the apex.

These characters seem to be the only ones in which all the tribes agree. As there are many points in which wide differences occur these will be left for discussion in their proper places.

For convenince of study the sub-family may be divided in two grand sections.

Head with two supra-orbital setigerous punctures.	HARPALINÆ BISETOSÆ.
Head with one supra-orbital setigerous puncture.	HARPALINÆ UNISETOSÆ.

Small as this character may seem it is probably one of the most invariable of any that have been suggested for the division of this large series of genera and tribes. No exception occurs in our fauna.

When two setæ occur the anterior is close to the margin of the eye in front, the posterior is a little remote from the eye opposite the posterior margin. When there is one seta, it is almost always a little removed from the margin of the eye, and is situated opposite the middle of the eye or a little posterior to that point.

It will be observed in glancing over the series of tribes and genera that there are three well-marked types, *Pterostichus*, *Lebia*, and *Harpalus*, closely related among themselves, around which we may group other types, either more or less intermediate between the three, or related to them as a centre and from thence diverging with no definite affinity. It is therefore impossible to construct any linear arrangement which will exhibit all the evident relationships without at the same time interrupting other equally evident affinities.

The tribes which follow are so placed that those which seem to exhibit the closest affinity with the Carabinæ are at the beginning, with those following which seem to lead to the true Harpaline type.

Those with the two supra-orbital setæ will be considered first, and for convenience of reference will be called by the following name.

HARPALINÆ BISETOSÆ.

This section contains by far the larger number of tribes and genera and presents many difficulties in its study. Many of the characters used in the table are the common property of science, others are new or are now brought into greater prominence.

As in the Carabinæ, it appears to have escaped notice that a number of genera have the posterior coxæ separated so that the metasternum and abdomen meet. This is an important character and its use is attended with good results.

The internal elytral plica by its presence serves to separate a number of tribes. The object of this structure is to afford a means of support to the edge of the abdomen, and at the origin of the plica posteriorly the last ventral segment is firmly held when in repose. It will be observed that in those genera with a plica the upper edges of the ventral segments are vertical, those without the plica have the edge inflexed. As a rule the pliciferous genera are terrestrial and are at best feeble flyers, the majority of the others are easy flyers and less terrestrial in their habits. This however is merely a general statement with many exceptions on both sides.

The tribe Panagæini is placed at the head in the belief that some of its members will show a closer relationship with the *Clivinæ* than has yet been indicated.

The tribes in our fauna may be distinguished as follows:—

Mandibles with a setigerous puncture in the groove (scrobe) on the outer side.
  Antennæ slender with at most two basal joints glabrous. The abdominal segments entirely corneous.
    Last joint of palpi subulate. Mesosternal epimera wide. XVI. BEMBIDIINI.
    Last joint of palpi slender—elongate or subcylindrical. Mesosternal epimera narrow. XVII. POGONINI.
  Antennæ moniliform or slightly compressed externally, four basal joints glabrous. (The abdominal segments 3–4–5 narrowly coriaceous on their posterior margins in *Nomius*.) XIII. NOMIINI.

Mandibles without setigerous puncture in the scrobe.

Posterior coxæ separated, the first ventral segment visible between them.

Margin of elytra interrupted posteriorly. Middle coxæ closely approximated or contiguous. XII. Ozænini.

Posterior coxæ contiguous (except in Egini).

A.—Margin of elytra interrupted at posterior third and with a distinct internal plica.

a.—Four basal joints of antennæ glabrous, antennæ moniliform or slightly compressed.

b.—Mesosternal epimera broad; anterior tibiæ not dilated; segments 3–4–5 of abdomen coriaceous posteriorly. Body not pedunculate. XIV. Psydrini.

b b.—Mesosternal epimera narrow; anterior tibiæ dilated; abdomen entirely corneous. Body pedunculate. XV. Morionini.

a a.—Three basal joints or less of antennæ glabrous.

c.—Head more or less constricted behind the eyes and dilated to a semi-globular neck. Terminal joint of maxillary palpi arising obliquely from the preceding joint. XI. Panagæini.

c c.—Head not constricted behind the eyes. Terminal joint of the maxillary palpi arising normally from the end of the preceding joint. XVIII. Pterostichini.

B.—Margin of elytra not interrupted posteriorly, without internal plica.

a.—Front short, labrum impressed. XIX. Licinini.

a a.—Front normal.

b.—Penultimate joint of labial palpi bisetose.

c.—Posterior coxæ separated. XXV. Egini.

c c.—Posterior coxæ contiguous.

d.—Head elongate, prolonged behind the eyes, neck constricted and dilated behind in a semiglobular condyle.

e.—Elytra entire. XXII. Ctenodactylini.

e e.—Elytra truncate. XXIII.—Odacanthini.

d d.—Head not prolonged behind the eyes, neck not semiglobose.

f.—Elytra round at tip. Ungues simple. XXI. Anchonoderini.

f f.—Elytra obliquely sinuate. Ungues simple or feebly pectinate. XX. Platynini.

f f f.—Elytra truncate at tip.

g.—Anterior tibiæ slender. Paraglossæ membranous. XXVI. Lebiini.

g g.—Anterior tibiæ stout, gradually broader. Paraglossæ corneous. XXVII. Helluonini.

b b.—Penultimate joint of labial palpi plurisetose in front and always longer than the terminal joint. First antennal joint elongate. XXIV. Dryptini.

Tribe XI.—**PANAGÆINI.**

Antennæ slender, arising under a distinct frontal ridge, three basal joints glabrous, without fine punctuation and pubescence, but ciliate. Head usually constricted behind the eyes and dilated to a semiglobular neck, front with two supra-orbital setæ. Eyes round, rather prominent, distant beneath from the buccal opening. Labrum with four setæ only. Maxillæ small, the inner lobe slender, hooked at tip, ciliate or spinous within, outer lobe stout, biarticulate; palpi elongate, the last joint triangularly dilated and inserted obliquely on the preceding, these two hairy. Mentum emarginate, toothed at bottom, the basal suture distinct. Ligula moderately prominent, bisetose at tip; the paraglossæ adherent and rarely longer than it, palpi moderate in length, the terminal joint triangular. Thorax variable in form. Body not pedunculate, scutellum distinct. Elytra not margined at base, sides narrowly inflexed, margin interrupted posteriorly and with an internal plica. Prosternum not prolonged. Mesosternum oblique, the epimera very narrow. Metasternal epimera distinct, posterior coxæ contiguous. Tibiæ ciliate externally, the anterior emarginate within, the spurs distant. Tarsi slender in our genera, the fourth joint bilobed in certain exotic genera.

The males rarely have the anterior tarsi dilated. In our genera the first two joints of the anterior tarsi are dilated and hairy beneath.

The affinities of the tribe are not well marked in any direction, it appears in fact to stand more nearly alone than any tribe of the present sub-family.

Two genera occur in our fauna which differ in the following manner:—

Clypeus prolonged beyond the base of the mandibles, the latter decussating, scissor-like. **Panagæus.**

Clypeus emarginate; mandibles stout, pincer-like. **Micrixys.**

The latter genus has the head not distinctly constricted but the neck is of the same semiglobular form as in the former.

In these genera the ocellate punctures, which are usually observed near the margin of the elytra in Carabidæ, are absent, but are present in other foreign genera of the tribe. They are also absent in *Apotomus*, a genus not related to the present tribe.

Tribe XII.—OZÆNINI.

Antennæ arising under distinct frontal plates, the four basal joints not finely pubescent but hairy. Clypeus prolonged at middle. Head more or less narrowed behind the eyes to a neck and with at least two supra-orbital setæ. Eyes round, moderately prominent, irregular in outline behind, distant from the buccal opening beneath by the moderately widened genæ. Mentum broad, the suture at base usually very plainly visible, toothed (except in *Eustra*), ligula moderate or small; the paraglossæ narrow and entirely adherent; the palpi variable in form, the terminal joint usually cylindrical, flattened and truncate at tip, the maxillary palpi similar. Thorax with numerous small setigerous punctures along the margin. Body more or less pedunculate. Scutellum not prolonged between the elytra. Elytra not margined at base, narrowly inflexed at the sides, margin interrupted one-third from apex but without internal plica. Prosternum not prolonged at tip. Mesosternum very narrow, in some cases not separating the middle coxæ. Mesosternal epimera broad, not attaining the middle coxæ. Metasternal epimera visible. Posterior coxæ distant, the first ventral segment visible between them. Anterior tibiæ emarginate on the inner side; the spurs distant. Tarsi slender, simple in both sexes.

The sexual characters are feeble, the males sometimes having the anterior femora toothed beneath.

By all European authorities this tribe has been placed in the series in which the mesosternal epimera attain the coxal cavities. The idea originated with Schiödte, has been adopted by Schaum and acknowledged by Chaudoir.

The interruption of the lateral margin of the elytra is a character entirely different from that observed in the succeeding tribes. If the margin is followed from the apex to the interruption, it will be observed that this end passes *over* that which is formed by the anterior portion, while in the Pterostichini, etc., the posterior end passes *under* the anterior and is continued on the under side of the elytron in a long ridge.

The relationships of the Ozænini are feeble in the direction of *Pseudomorpha*, but more decided towards *Nomius* and *Psydrus*, which lead through the Morionini to the central mass of the Harpaline series.

One genus is represented in our fauna, and the species *Pachyteles testaceus* Horn, occurs in Arizona. *Physea* has occurred at Tampico, Mexico, and may possibly be found in Texas.

Tribe XIII.—**NOMIINI.**

Antennæ somewhat moniliform, arising under a distinct frontal ridge, four basal joints glabrous, first joint stouter not long, third nearly as long as the two following, eleventh oval-acuminate. Head stout, oval, neck broad, front with two supra-orbital setæ, clypeus slightly prolonged. Eyes round, prominent, free posteriorly, closely approaching the buccal opening beneath. Labrum short, broadly emarginate. Mandibles slightly prominent, arcuate, acute at tip, inner edge feebly toothed at middle, outer lower edge slightly expanded, the outer face concave and with a distinct setigerous puncture. Maxillæ stout, with a double row of short stiff spines within, palpi stout, terminal joint slightly fusiform and obtuse at tip. Mentum broad, deeply emarginate without tooth, basal suture distinct. Ligula short, broad, acute and bisetose at tip; the paraglossæ slender, slightly longer than it and ciliate within at tip; palpi short, last joint slightly fusiform, obtuse at tip. Thorax with two setæ near the front angles and one at the posterior. Body pedunculate, scutellum not visible between the elytra. Elytra slightly margined at base near the hind angles, sides very narrowly inflexed, margin slightly interrupted posteriorly, with a short internal plica, and no dorsal punctures. Prosternum obtuse, not prolonged at tip. Mesosternum oblique, the coxæ separated, epimera and episterna nearly equal. Posterior coxæ contiguous. Abdomen with posterior margins of segments 3–4–5 narrowly coriaceous. Legs moderate, middle and posterior tibiæ ciliate externally, the anterior slightly broader at tip, emarginate within, the spurs distant. Tarsi not dilated. Sexual characters as in *Scarites*.

As far as ascertained, this tribe is represented in our fauna by a single genus *Nomius* (Haplochile Lec.), the position of which has been the cause of differences of opinion. For Dejean, Duval, and Schaum it was a Morionide, Lacordaire (not knowing *Haplochile*) places Nomius in the Ozénides and *Haplochile* in Morionides. Chaudoir properly omits it from his essay on the Ozénides.

From the Morionini it differs in the form of the anterior tibiæ and mesosternal epimera and the presence of a mandibular setigerous puncture, the form of the ligula and paraglossæ and the structure of the abdomen.

The mesosternum is not narrow between the coxæ but emarginate, receiving the metasternum and in this respect differs greatly from the Ozænini which have the mesosternum, at most, linear between the coxæ and never wide enough at tip to be emarginate.

Nomius contains but one species *N. pygmæus* Dej., which occurs in various parts of southern Europe, and in many places in our country from Georgia to California and Lake Superior.

It occurs under stones, etc., in moist places, and exhales a strong fetid odor.

Tribe XIV.—**PSYDRINI.**

Antennæ moderate, arising under a distinct frontal ridge, first joint moderately stout, cylindrical, third longer than second, the three basal joints and the base of the fourth glabrous, 4–10 elongate-ovate, eleventh nearly as long as the two preceding. Head triangular, moderately constricted behind the eyes forming a broad neck, front with two supra-orbital setigerous punctures the posterior distant from the margin of the eye, epistome slightly prolonged. Eyes oval, slightly truncate behind, distant beneath from the buccal opening. Labrum short, slightly emarginate. Mandibles moderately prominent, arcuate, acute at tip, inner margin with a small tooth at middle, outer edge concave and without setigerous puncture. Maxillæ spinous within, the palpi moderate, the last joint longer than the preceding. Mentum broad, lateral lobes rounded, deeply emarginate and with a short, broad, bifid tooth, the mental suture distinct. Ligula short and broad, truncate and sexsetose at tip; the paraglossæ semicorneous, adherent in all their length and not longer than the ligula; the palpi rather short, last two joints equal, the terminal somewhat fusiform and truncate at tip. Thorax trapezoidal, sides with three setigerous punctures, one at each angle and one slightly in front of middle Body not pedunculate, scutellum distinct between the elytra. Elytra slightly margined at base near the humeri, sides narrowly inflexed, lateral margin slightly interrupted posteriorly and with a short internal plica, disk punctato-striate, two dorsal punctures on the third interval adjacent to the third stria, one-fourth from base and one-fourth from apex. Prosternum not prolonged. Mesosternum nearly flat, the middle coxæ distant, epimera wide nearly equalling the episterna. Metasternal epimera distinct, posterior coxæ contiguous. Ventral segments 3-4-5 with posterior margins coriaceous. Legs moderate, the tibiæ smooth externally, the anterior emarginate with the spurs distant.

The anterior tarsi do not differ in the sexes; the sexual characters are the same as in *Scarites*.

The only genus known which can be referred to this tribe is *Psydrus*. Its form is not unlike some Bembidia, the color piceous.

One species of *Psydrus* is known (*P. piceus* Lec.), which occurs from Lake Superior to northern California. It lives under dead bark, and ejects a liquid from its anus when disturbed, which is not, as in *Nomius*, especially offensive.

Tribe XV.—**MORIONINI.**

Antennæ more or less moniliform with four entirely glabrous joints, arising under slight frontal plates. Head suddenly narrowed behind the eyes, neck stout, front with two supra-orbital setæ, clypeus slightly prolonged. Eyes round, moderately prominent, truncate posteriorly by the sides of the head, distant beneath from the buccal opening. Mandibles at least slightly prominent, without setigerous puncture externally. Maxillæ ciliate internally (with a tooth behind the apex in *Morio*); the palpi moderate, the last joint slightly fusiform. Mentum deeply emarginate, usually with a bifid tooth; ligula broad, free and bisetose at apex, the paraglossæ slender, longer than it, not ciliate; palpi moderate, the last joint cylindrical (longer than that of the maxillary *Morio*). Thorax with a setigerous puncture at each angle (and three at the side *Morio*). Body slightly pedunculate, scutellum distinct. Elytra feebly margined at base, sides narrowly inflexed, disk with a single dorsal puncture at apical third, on the third interval near the third stria; margin with a very feeble interruption but with a distinct internal plica. Prosternum not prolonged. Mesosternum rounded in front, the epimera very narrow. Metasternal side pieces narrow, the epimera distinct, posterior coxæ contiguous. Ventral segments without coriaceous margin. Tibiæ gradually broader to apex, the middle finely spinulose externally, the anterior more dilated, the apical angle somewhat prolonged, inner side deeply emarginate, the inner spur above the emargination.

The first three joints of the anterior tarsi are slightly dilated in the male.

But one genus, *Morio*, is represented by a single species, *M. Georgiæ*, in the Southern States. The head is suddenly and slightly constricted behind. It is commonly found under bark, and is an elongate, shining black insect, with deeply striate elytra.

Tribe XVI.—**BEMBIDIINI.**

Antennæ slender, arising under a slight frontal margin, the first two or often the first only glabrous, third joint sometimes not longer than the second. Head rarely narrowed behind the eyes to a neck (*Thalassobius*), with two supra-orbital setæ. Eyes round prominent, very narrowly separated beneath from the mouth (absent in *Anillus* and *Scotodipnus*). Clypeus usually moderately prolonged and with an erect seta on each side. Labrum transverse, sexsetose in front, rarely quite small (certain *Bembidia*). Mandibles feebly arcuate, acute at tip and with a setigerous puncture externally. Maxillæ slender, hooked at tip, ciliate or slightly spinulose within, the outer lobe slender and biarticulate or with the two joints united (*Amerizus*), the palpi moderate in length, the last joint usually small, subulate, sometimes conical, the penultimate club-shaped and pubescent. Mentum with basal suture distinct, variably emarginate, toothed, the tooth simple or notched; the ligula broader in front, free and truncate at tip and bisetose, the setæ usually very closely approximated; the paraglossæ slender, longer than the ligula and not ciliate within; the palpi moderate in length, the terminal joint small, subulate, the penultimate more or less club-shaped and bisetose in front. Thorax with a setigerous puncture at the side and at the hind angle. Elytra sometimes margined at base, sides narrowly inflexed, the margin interrupted posteriorly and with a distinct internal plica, disk with dorsal punctures or foveæ, usually two, rarely three, and in a few instances numerous. Prosternum not prolonged. Mesosternum moderately separating the coxæ, the epimera moderately broad and wider externally. Metasternal epimera distinct, posterior coxæ contiguous. Legs moderate, the middle and posterior tibiæ slightly ciliate exterually, the anterior deeply emarginate within and sometimes with the outer apical angle obliquely truncate (certain *Tachys*). Tarsi slender, claws simple, rarely serrulate (*Elaphropus*). Surface usually glabrous, pubescent in *Tachypus*.

The males have usually two joints of the anterior tarsi dilated and squamulose or pilose beneath, but in some *Tachys* the tarsi are similar in the sexes.

This tribe is as well defined as any in the Carabidæ, the form of the last joint of the palpi being peculiar to it and giving the name by which it is often known, *Subulipalpi*.

The serrate claws of *Elaphropus* Motsch., an Asiatic genus, is a very singular character to occur in the present tribe. The species of this genus resemble *Tachys* and notably *incurvus*, etc.

The genera known to occur in our fauna are as follows:—

Anterior tibiæ not obliquely truncate at apex. Sutural stria not recurved at apex
  Eyes large or moderate; posterior coxæ contiguous.
    Elytra punctured without stria, surface pubescent. **Tachypus.**
    Elytra striate or striato-punctate, glabrous. **Bembidium.**
  Eyes entirely wanting; posterior coxæ separated. **Anillus.**
Anterior tibiæ obliquely truncate at apex. Sutural stria recurved at apex.
    Elytra with the eighth stria interrupted or less deep at middle. **Tachys.**
    Elytra with the eighth stria very deep. **Pericompsus.**

With *Bembidium* are included *Lymnæum* and also for the present *Amerizus* Chaud. The latter genus was founded on *Trechus spectabilis* Mann., from the peculiar structure of the outer maxillary lobe which has the two pieces connate. Beneath his generic description Chaudoir takes occasion to refer *Trechus oblongulus* Mann., to the genus *Lymnæum* as an aberrant species. On dissection the outer maxillary lobe appears more completely consolidated than in the true *Amerizus*. Rather than recognize a genus with two so dissimilar species it seems better to ignore the character and refer both to *Bembidium* where each will find better associates. It is well known that the mouth parts in *Bembidium* vary otherwise to an extent which would be considered generic in other parts of the series, but all attempts to divide it have thus far been unsuccessful, the characters becoming evanescent.

Tachypus is, however, capable of feeble definition, but the general appearance of the species is so distinct that it seems preferable to retain it.

Tachys and *Pericompsus* should probably be united, the characters separating the latter being rather those of a group of species than a genus.

Tribe XVII.—**POGONINI.**

Antennæ slender, arising under a feeble frontal ridge; the third joint usually very little longer than the second, the first two joints only glabrous. Head sometimes constricted behind the eyes, two supra-orbital setæ. Eyes (sometimes absent) rarely prominent, distant beneath from the mouth. Clypeus moderately prolonged and with a setigerous puncture each side. Labrum short, truncate or broadly emarginate, plurisetose in front. Mandibles moderately prominent, feebly arcuate, acute at tip and with a setigerous puncture on the outer side. Maxillæ slender, acute at tip, ciliate with a few stiff hairs inside, the outer lobe biarticulate, palpi moderate or long, the terminal joint variable but not subulate, the penultimate joint not pubescent. Mentum broad, its basal suture often obsolete, deeply emarginate and toothed, the tooth bifid or simple, the epilobes often dentiform; ligula moderately prominent, usually broad, the tip free or arcuate, uni- or bisetose (*Pogoni*) or even plurisetose (*Trechi*), the paraglossæ slender, very little longer than the ligula and not ciliate within (*Pogoni*); or slender, long and ciliate within at tip (*Trechi*); the palpi slightly variable, the last joint not subulate. Thorax with a seta at the sides and at hind angle. Body not pedunculate, scutellum distinct. Elytra sometimes margined at base, sides narrowly inflexed, margin posteriorly entire or with a very feeble sinuation and without internal plica, disk more or less striate, dorsal punctures distinct. Prosternum not prolonged at tip. Mesosternum declivous in front, moderately separating the coxæ, the epimera narrow. Metasternum variable in length, the epimera distinct, the posterior coxæ contiguous. Legs moderate or slender, the tibiæ not spinulose externally, the anterior deeply emarginate within, the inner spur remote from the apex. Tarsi slender, claws simple.

The anterior tarsi of the males have two joints dilated and squamulose beneath.

As above constituted the tribe contains in our fauna two groups, separated in the following manner:—

Terminal joint of palpi more or less cylindrical and obtuse at tip, that of the labial as long as the preceding. Pogoni.

Terminal joint of palpi slender, acute at tip, that of the labial palpi shorter than the preceding. Trechi.

In addition to the above characters the form of the paraglossæ and the setæ of the ligula add some weight to the separation of the two groups.

Group I.—**Pogoni.**

This group contains in our fauna two genera:—

Head more or less constricted behind the eyes or transversely impressed; elytra not margined at base. **Patrobus.**

Head not constricted behind the eyes; elytra usually margined at base. **Pogonus.**

These two genera are represented on both sides of the continent.

Group II.—**Trechi.**

This group contains in our fauna two genera which have the second joint of the antennæ somewhat pubescent; they are as follows:—

Head with distinct eyes; anterior tibiæ slightly broader to tip, the emargination extending nearly to the middle of the tibia. **Trechus.**

Head without eyes; anterior tibiæ slender, the emargination at apical third. **Anophthalmus.**

Our species of the latter genus may be divided in two series; the first contains *Tellkampfii*, in which the last joint of the maxillary palpus is very distinctly shorter than the penultimate; the second comprises all our other species with the same joint equal to, or even a little longer than, the preceding.

The suture between the mentum and its support is often entirely obliterated, especially in *Anophthalmus*, and is very indistinct in some *Patrobus*, although sufficiently marked in others, and in nearly all *Trechus*.

Tribe XVIII.—**PTEROSTICHINI.**

Antennæ arising under a distinct frontal ridge, the three basal joints glabrous. Head more or less constricted behind the eyes, except in *Amara*, and with two supra-orbital setigerous punctures, clypeus prolonged beyond the base of the mandibles, the latter without setigerous puncture externally. Maxillæ ciliate or spinulose within, hooked at tip (except *Stomis* and *Agelæa*), the palpi of moderate length and of variable structure. Mentum broad, of variable length, usually deeply emarginate and toothed, varying to a simple bisinuation; ligula at least moderate in size, often large, more or less free at tip and bisetose (quadrisetose in *Myas*), the paraglossæ slender and usually longer than it, sometimes much longer (*Stomis*, *Loxandrus*), the palpi variable in form, the second joint sometimes longer than the terminal. Thorax with at least one setigerous puncture at the side, and one at the hind angle. Body not pedunculate (subpedunculate in some *Evarthrus*), scutellum distinct. Elytra narrowly inflexed, margin strongly interrupted posteriorly and with a well-marked internal plica, disk usually with dorsal punctures. Prosternum not prolonged at tip, margined or not. Mesosternum oblique or vertical in front, rather widely separating the coxæ, the epimera narrow and often wider internally than externally. Metasternum and side pieces variable in length, the epimera always distinct, posterior coxæ contiguous. Middle and posterior tibiæ variably spinulose externally, the anterior slightly so near the tip, the latter broader at tip, deeply emarginate within, the inner spur situated at the summit of the emargination.

The anterior tarsi of the male have three joints rather broadly dilated and squamulose beneath.

This tribe is represented in our fauna by but one group, Pterostichi. *Pterostichus* and *Amara* occur on both sides of the continent; the others in the Atlantic region only. The genera are not clearly limited, and as reduced by recent studies may be separated by the following table:—

Terminal joint of palpi dilated. Elytra without dorsal puncture. **Myas.**

Terminal joint of palpi cylindrical or slightly oval.

  Anterior tarsi of male normally dilated.

    Terminal joint of palpi as long as or longer than the penultimate, the latter bisetose in front. **Pterostichus.**

    Terminal joint of palpi shorter than the penultimate, the latter plurisetose in front.

      Elytra with one dorsal puncture. **Evarthrus.**

      Elytra without dorsal puncture. **Amara.**

  Anterior tarsi of male obliquely dilated. **Loxandrus.**

By this arrangement *Holciophorus*, *Lophoglossus*, *Piesmus*, and the second series of *Evarthrus* revert to *Pterostichus*. *Amara* is intended in its most comprehensive sense, although some of its groups have characters of apparently greater value than those used above in the separation of genera. *Loxandrus* is the nearest approach in our fauna to the Trigonotomæ.

Tribe XIX.—**LICININI.**

Antennæ slender, moderately long, arising under a distinct frontal plate, the three basal joints glabrous (two in *Badister*). Head short, moderately stout, with two supra-orbital setæ, clypeus short, not prolonged between the mandibles, emarginate, and exposing the basal membrane of the labrum, with a setigerous puncture in each angle. Labrum usually short, emarginate, longitudinally impressed. Eyes moderate in size, not very distant from the mouth, except in *Dicælus*, where they are small and very distant. Mandibles stout, more or less arcuate, tips usually obtuse, except in *Dicælus*, where they are feebly arcuate and acute. Maxillæ hooked at tip, ciliate within, the outer lobe rather slender, biarticulate, the palpi moderate in length, the last joint variable in form. Mentum deeply emarginate without tooth (in our genera), the ligula and paraglossæ variable in form, the former bisetose at tip, the palpi moderate, the last joint variable in form, but equal in length to the preceding, which is bisetose in front. Thorax variable in form, with one (rarely two) lateral setigerous puncture, and one near (rarely at) the hind angle. Body not pedunculate. Elytra margined at base, sides at most moderately inflexed, the margin rarely (*Licinus*) sinuate, not interrupted, and without internal plica, surface striate, and with one (*Diplochila*), two (*Badister*), or no dorsal puncture (*Dicælus*). Prosternum obtuse at tip. Mesosternum concave in front, the epimera very narrow. Metasternal epimera distinct. Posterior coxæ contiguous. Anterior tibiæ deeply emarginate within, the middle and posterior tibiæ slightly spinulose or ciliate externally. Tarsi slender, claws simple.

The anterior tarsi of the males have three joints rather broadly dilated, densely spongy pubescent, and ciliate at the sides. In *Licinus*, however, there are but two dilated joints.

The genera proper to our fauna are three in number. *Licinus silphoides* has in one or two instances been found, but under circumstances which show that it had been introduced; for convenience, however, it is placed in the table.

Antennæ with three basal joints entirely glabrous.
  Eighth and ninth striæ of elytra very closely approximated. The third interval with a dorsal puncture, apex very feebly sinuate. **Diplochila.**
  Eighth and ninth striæ distant.
    Elytra not sinuate at apex.
      Seventh interval more or less carinate at base. **Dicælus.**
    Elytra strongly sinuate at apex.
      Seventh interval not carinate. **Licinus.**
Antennæ with two basal joints only glabrous. Eighth and ninth striæ not approximated, third interval with two dorsal punctures, apex not sinuate. **Badister.**

Diplochila has the terminal joint of the palpi more or less cylindrical and obtuse at tip. *Dicælus* and *Licinus* have the last joint more or less triangular, and in *Badister* somewhat oval and flattened.

Tribe XX.—**PLATYNINI.**

Antennæ slender, rarely (*Perigona*) slightly thickened, arising below a slight frontal ridge, the condyle exposed; three basal joints glabrous, first joint not long, second usually short, rarely as long as the third, in which case neither is elongate, third moderate in length, usually longer than the others, but rarely equal to or shorter than the fourth. Eyes moderately prominent, close to the mouth beneath. Head oval, rarely elongate, eyes not very distant from the thorax, two supra-orbital setæ, front slightly narrowed before the eyes, clypeus moderately prolonged, and with a setigerous puncture each side. Labrum moderately prominent, usually truncate in front and sexsetose, rarely deeply emarginate. Mandibles moderately prominent, feebly arcuate, acute at tip, without external seta. Maxillæ hooked at tip, ciliate or spinulose within, outer lobe biarticulate, palpi moderate in length, the terminal joint variable, rarely securiform. Mentum deeply emarginate, toothed or not, basal membrane more or less prominent, ligula very variable in form, bisetose in front, the paraglossæ variable in form and extent of union with the ligula; palpi moderate, the last joint somewhat variable in form, the penultimate bisetose in front. Thorax variable, sides with a setigerous puncture, a second at the hind angle, when the latter is distinct or in front of the angle, when it is obtuse or rounded. Elytra margined at base, sides narrowly inflexed, margin entire without internal plica, apex obliquely sinuate, sometimes deeply, or even barely perceptibly, dorsal punctures usually present, rarely (*Pristonychus*) wanting, surface striate, the eighth stria distant from the margin, except in *Perigona.* Prosternum not prolonged at tip. Mesosternal epimera narrow. Metasternal epimera distinct, posterior coxæ contiguous Legs slender, the femora sometimes thickened, tibiæ slender, not sulcate externally, the middle and posterior slightly ciliate externally, the anterior slender, emarginate within, spurs moderate in length. Tarsi slender, the joints often sulcate on their outer side, the fourth entire, emarginate or bilobed. Claws simple, finely serrate or pectinate.

The males have the anterior tarsi with three joints feebly dilated and squamulose beneath.

Perigona seems also better placed here than elsewhere, and appears to lead towards the Trechini in the same manner that *Olisthopus* does to the Lebiini.

A study of the form of the ligula and paraglossæ of those genera which are acknowledged on all sides to be undoubted members of the present tribe *Platynus*, *Calathus*, and *Olisthopus*, seems to show what little value these organs have in the definition of tribes and groups of genera. The ligula of *Olisthopus* is very plainly that of many Lebiides, *Platynus* reproduces very closely that of *Pterostichus*, *Calathus* proper is as nearly as possible intermediate between the two, while the section *Pristodactyla* is a modification of *Platynus*. The tip of the ligula is free in *Platynus* and *Pristodactyla*, and not free in the other genera.

The mentum tooth also seems to furnish characters of an evanescent nature. In some *Platynus*, especially those in which the hind angles of the thorax are distinct (*brunneomarginatus*, *ovipennis*, etc.), the tooth is longitudinally impressed and emarginate at tip, while in the *Agonum* type the tooth is very obtuse. The same variation is observed in *Calathus*, some having quite an acute tooth, others even bifid.

The genera in our fauna are divisible, primarily, into two groups by the following characters:—

Eighth elytral stria distant from the margin and not deeply impressed; thorax truncate or emarginate at base. PLATYNI.

Eighth elytral stria confluent with the margin in its basal half, deeply impressed and attaining the suture. PERIGONÆ.

Group I.—**Platyni.**

This group might easily be separated in many minor subdivisions by including the genera not represented in our fauna.

The following genera occur with us:—

Ungues more or less serrate. Mentum toothed.	
Tarsi glabrous above. Elytra with dorsal punctures.	**Calathus.**
Tarsi hairy above. Elytra without dorsal punctures.	**Pristonychus.**
Ungues not serrate. Elytra with dorsal punctures.	
Mentum toothed.	**Platynus.**
Mentum not toothed.	**Olisthopus.**

Olisthopus is represented in the Atlantic region by two species; the other genera occur on both sides of the continent. Of *Pristonychus* two species are known, both of them identical with European forms (*complanatus* and *terricola*), and have probably been introduced, the first mentioned being rather widely spread by commerce over the globe.

Group II.—**Perigonæ.**

This group is represented by one genus *Perigona*, which has for its synonyms Trechicus, Nestra, and Spathinus. The mentum has its epilobes prolonged to an acute spine, the emargination is deep without tooth. The ligula is narrow and truncate at tip, the paraglossæ slender and a little longer than the ligula, and united with the latter by a thin almost transparent membrane, which extends from the base of the paraglossæ to the tip of the ligula.

The antennæ are rather stout beyond the third joint, and the second is as long as the third.

There is certainly no reason why *Perigona* should be placed as a Truncatipenne. The two supra-orbital setæ remove it from association with the Harpalide series. Taking its entire organization, it seems better placed in the present tribe than anywhere else.

Tribe XXI.—**ANCHONODERINI.**

Head oval or rounded, not prolonged nor constricted to a narrow neck; with two supra-orbital setigerous punctures. Antennæ slender, not thicker externally. Eyes variable in prominence, but always close to the buccal fissure beneath. Thorax more or less cordiform, the lateral margin distinct, setigerous punctures at side situated the one in front of middle, the second at the hind angle (except in *Lachnophorus*, where it is slightly in front). Elytra feebly margined at base, the lateral margin distinct, apices rounded. Scutellum and scutellar stria distinct. Tarsi slender, fourth joint simple. Claws simple. Posterior coxæ contiguous. Body above pubescent or pilose.

In the above characters will be found all that will define the genera placed here. With other genera the tribe might possibly be more properly divided in three, but for the present they will be considered groups forming an osculant tribe.

These groups are as follows:—

Antennæ with four glabrous joints.
  Thorax ovate, lateral margin obtuse, the posterior setigerous puncture in front of the basal angle. Body subpedunculate. LACHNOPHORI.
    Last joint of palpi pubescent, ovoid, suddenly acuminate at tip.
      Elytra with three dorsal punctures. **Lachnophorus.**
    Last joint of palpi glabrous, conical, gradually narrowed to tip.
      Elytra without dorsal punctures. - **Euphorticus.**
  Thorax cordiform, lateral margin acute, the posterior setigerous puncture at the hind angle. Body not pedunculate. ANCHONODERI.
    Last joint of palpi gradually narrowed to tip and slightly oval. Elytra with three feeble dorsal punctures. **Anchonoderus.**
Antennæ with three basal joints glabrous. Thorax cordate, margin acute, the hind angle with setigerous puncture. ATRANI.
    Palpi as in *Anchonoderus*. Dorsal punctures not evident. **Atranus.**

The structure of the antennæ of the first two tribes seems to have been overlooked The joints 2–4 are not absolutely glabrous in the strict acceptation of the term, but they are devoid of the fine punctuation and pubescence which cover the following joints.

From the characters above given it will be evident that the Lachnophori osculate closely with the Egini, and the Atrani with the Platynini, while the Anchonoderi are intermediate between the other two groups.

Group **Lachnophori.**

Eyes large, moderately prominent Head oval, sometimes slightly constricted behind the eyes, front more or less deflexed. Elytra not margined at base, the apex with very feeble sinuation in *Lachnophorus* or rounded in *Euphorticus*, the striæ entire, the eighth stria distant from the margin, with very distinct ocellate punctures in the former genus, not distinct in the latter. The setigerous punctures of the side of the thorax are two in number, the first situated at the point of greatest width, the second midway between this and the hind angle. The thorax is not wider than the head between the eyes

The males have the anterior tarsi slightly dilated, and from the anterior angle at the inner side of the joints 1–3 proceeds a brush of fine silken hair.

Euphorticus Horn, is founded on *Lachn. pubescens* Dej., and the only characters separating it are those given in the table.

Group **Anchonoderi.**

The eyes are not prominent. Head oval, slightly narrowed behind the eyes, front horizontal. Elytra not margined at base, the apices rounded, surface striate, eighth stria distant from the margin and with the ocellate punctures feeble, dorsal punctures three but fine and indistinct. Thorax cordate as wide as the head, lateral setigerous punctures situated at the point of greatest width and in the hind angle.

The anterior tarsi of the males have three joints slightly dilated, and with squamiform papillæ and ciliate at the side.

Anchonoderus is represented in our fauna by one species from Texas.

Group **Atrani.**

Head oval, more elongate than *Anchonoderus*, the eyes not prominent. Antennæ with but three joints glabrous, the fourth punctured and pubescent as the fifth. Thorax cordate, a little broader than the head, the setæ in the normal position at the side and in the hind angles. Elytra margined at base, the apices rounded, surface striate, the ocellate punctures well marked, dorsal punctures not distinct.

The sexual characters are as in *Anchonoderus*.

This group contains in our fauna but one species, *Atranus pubescens* (Dej.).

Tribe XXII.—**CTENODACTYLINI.**

Antennæ slender, base free, three basal joints glabrous, first joint stouter, as long as the next two, 3–11 equal or nearly so. Head rhomboidal, prolonged behind the eyes and narrowed to a distinct neck, front with two supra-orbital setæ; clypeus moderately prolonged, a setigerous puncture each side. Eyes large, moderately prominent, narrowly separated from the mouth beneath. Labrum transverse, feebly emarginate, margin sexsetose. Mandibles arcuate, acute at tip, not prominent. Maxillæ slender, ciliate and spinous within, the outer lobe slender and with two equal joints, the palpi slender, the terminal joint elongate-oval and acute. Mentum deeply emarginate, toothed (except in *Pionycha*), ligula moderately prominent, the tip bilobed or narrowed and bisetose; paraglossæ slender and acute, usually longer than the ligula; palpi slender, last joint oval acute, the penultimate bisetose in front. Thorax elongate, narrower than the head, margin feeble, sides with a setigerous puncture near the middle and at the hind angle. Body subpedunculate, scutellum not prolonged between the elytra. Elytra oblong-oval, not margined at base, lateral margin distinct and entire, without internal plica, apices rounded without sinuation, disk striate, third interval with three indistinct dorsal punctures. Prosternum slightly prolonged at tip. Mesosternum oblique, the epimera very narrow. Metasternal epimera distinct; posterior coxæ contiguous. Legs slender, middle and posterior tibiæ slightly ciliate externally, the anterior emarginate, its spurs very small. Tarsi slender, the first joint as long as the next two which are oval, the fourth broad, deeply bilobed and papillose beneath, claws simple, dentate or pectinate.

The tarsi are alike in the sexes. The males have one seta on each side of the apex of the last ventral segment, the females two.

The tribe as here constituted contains not only the Ctenodactylides of Lacordaire, but also his Trigonodactylides.

This tribe is represented in our fauna by *Leptotrachelus*, which occurs in the Atlantic region.

Tribe XXIII.—**ODACANTHINI.**

Antennæ slender, free at base, first joint as long as the next two, three basal joints glabrous. Head oval, more or less elongate, prolonged behind the eyes and narrowed to a neck, two supra-orbital setæ, clypeus moderately prolonged, truncate, a setigerous puncture on each side. Eyes large, moderately prominent, sexsetose in front. Maxillæ slender, ciliate and spinous within, outer lobe biarticulate with equal joints, palpi slender, the last two joints nearly equal, the terminal slightly fusiform, acute at tip. Mentum emarginate and toothed, ligula usually truncate at tip and bisetose, the apex free for a short distance, the paraglossæ small, rather longer than it, the palpi slender, the last joint slightly fusiform, acute at tip, the penultimate not longer than it, and bi-, rarely trisetose in front. Thorax narrow, the margin usually feeble or even entirely obliterated, a seta near the middle of the side, a second at the hind angle which is often feeble. Body subpedunculate, scutellum not projecting between the elytra. Elytra oblong-oval, base not margined, sides narrowly inflexed, margin entire without internal plica, the apices truncate, sometimes rather obliquely. Prosternum not prolonged. Mesosternum oblique, the epimera very narrow. Metasternal epimera distinct, posterior coxæ contiguous. Legs slender, the middle and posterior tibiæ slightly ciliate externally, the anterior emarginate within, the spurs small. Tarsi usually slender, rarely flattened, the fourth joint at most feebly emarginate. Claws simple.

The anterior tarsi exhibit no differences in the two sexes.

In all the genera there will be observed numerous punctures, bearing short erect hairs, situated either in the second stria or the third interval.

There is a close relationship between this tribe and the Ctenodactylini, and they are united by some authors, the only difference of moment being that the elytra are here truncate and there entire.

With the Lebiini and Dryptini there is also a very close relationship.

No constant character seems to separate the Odacanthini from the Dryptini except the form of the labial palpi.

The only genus which occurs in our fauna is *Casnonia*, represented by two species *pennsylvanica* and *ludoviciana*, in which the setigerous punctures of the second stria are very indistinct, and rarely more than four in number. The last-mentioned species is remarkable in having the thoracic margin rounded and the sutures of the under side entirely obliterated. The only other instance known of such a structure is in *Apotomus*, which Schaum says is distinguished from all other Carabidæ in this manner.

Tribe XXIV.—**DRYPTINI.**

Antennæ setaceous, free at base, three basal joints somewhat less pubescent, the first usually elongate and thicker than the following. Head constricted at a variable distance behind the eyes to a neck which sometimes expands semiglobularly at its insertion in the thorax, front narrowed before the eyes, two supra-orbital setæ, clypeus moderately prolonged and with a variable number of setigerous punctures, sometimes (*Drypta*) without any.. Eyes oval, moderately prominent, usually not very close to the mouth beneath. Labrum transverse, moderately prominent, truncate or feebly emarginate, sexsetose in front, the two lateral setæ in *Drypta* stouter, longer, and nearly vertical. Mandibles slightly prominent, feebly arcuate, acute at tip. Maxillæ hooked at tip, ciliate or spinous within, outer lobe usually slender, biarticulate, with equal lobes; palpi long, more or less hirsute, the terminal joint more or less triangular. Mentum variable in form, deeply emarginate, with or without tooth; ligula and paraglossæ variable in form; the palpi moderately long, the terminal joint shorter than the preceding, more or less triangular in form, the penultimate longer and plurisetose in front. Thorax variable in form, often moderately long, the lateral margin acute (except in *Drypta*), the lateral setæ often indistinct, that of the posterior angle usually entirely absent. Scutellum distinct. Elytra not margined at base, lateral margin acute, entire, apex truncate, dorsal punctures absent in our genera. Prosternum not prolonged. Mesosternal epimera very narrow. Metasternal epimera distinct; posterior coxæ contiguous. Legs moderately long, the femora often slightly clavate, the middle and posterior tibiæ ciliate or slightly spinous externally, the anterior slender, deeply emarginate within, the tibial spurs moderate in length, rarely (*Galerita*) long. Tarsi variable in form, the claws simple or pectinate.

The males have the anterior tarsi dilated, sometimes very slightly, and densely pubescent beneath.

The essential character separating the Dryptini from all other Truncatipennes is found in the structure of the labial palpi. The form of the basal joint of the antennæ usually relied on is by no means a good character, as in several genera of the preceding tribes the first joint is even longer than in some of those of the present. Where the scape attains its typical length it is usually more or less curved near the base. It is difficult in many of the genera to say how many joints are truly pubescent, as the hairs extend nearly to the base of the first joint.

The head assumes three forms: the first is that typified by *Galerita*, in which the head is elongate-oval, considerably prolonged behind the eyes, then constricted to a very narrow neck which dilates to a semiglobular condyle; the second is the *Zuphium* type, where there is a moderate prolongation behind the eye, and then very suddenly constricted to a narrow neck which is cylindrical; while in *Drypta* the constriction is close to the eyes, not abrupt, and the neck rather stout and cylindrical. The latter genus is further remarkable in having the setæ of the clypeus entirely wanting, their function being replaced by those of the outer side of the labrum, which acquire an unusual development; a similar character has been observed in *Pelecium*.

Our genera are not numerous, and may be known by the characters of the following table:—

Neck very narrow.
  Head prolonged behind the eyes, neck inserted in thorax by a semiglobular condyle. Clypeus with two setigerous punctures each side. **Galerita.**
  Head triangular, scarcely prolonged behind the eyes, very suddenly constricted to a narrow cylindrical neck. Clypeus with but one setigerous puncture on each side with a long seta. **Zuphium.**
Neck stout, head very little constricted.
  Thorax truncate at base, antennæ with third joint shorter than the fourth. **Diaphorus.**
  Thorax subpedunculate at base, antennæ with joints 2-4 nearly equal. **Thalpius.**

These genera are represented on both sides of the continent.

Tribe XXV.—**EGINI.**

Antennæ moderate in length, slightly thicker externally, arising under a feeble frontal ridge, the four basal joints glabrous; that is, they are somewhat hairy, but not densely punctured and finely pubescent as the following joints; the basal joint moderately stout, but not equal in length to the two following joints together. Head oval, rather strongly constricted at a distance behind the eyes to a neck, with two supra-orbital setæ. Eyes oval, in the axis of the head, moderately prominent, but distant beneath from the mouth. Clypeus feebly prolonged, a setigerous puncture each side. Labrum feebly prominent, slightly emarginate, sexsetose. Mandibles acute at tip, without setigerous puncture externally. Maxillæ slender, slightly hooked at tip, spinulose and ciliate internally, outer lobe slender, biarticulate, the terminal joint shorter; the palpi moderate in length, the terminal joint obovoid, suddenly narrowed and prolonged at tip, surface pubescent. Mentum deeply emarginate and with a short obtuse tooth; ligula not prominent, emarginate and bisetose at apex, the tip free for a short distance, paraglossæ slightly longer than it; palpi moderate, the terminal joint like that of the maxillary, the penultimate bisetose in front. Thorax ovate, somewhat constricted at base, margin almost entirely obliterated, sides with two setigerous punctures placed almost as in the *Clivinæ*. Body distinctly pedunculate, scutellum not visible between the elytra. Elytra not margined at base, and without scutellar stria, lateral margin obsolete, sides narrowly inflexed, apex subtruncate, disk striate at base, dorsal punctures three, but indistinct. Prosternum not prolonged. Mesosternum oblique, the epimera very narrow. Metasternal epimera distinct; posterior coxæ separated. Legs slender, tibiæ ciliate externally, the anterior deeply emarginate within. Tarsi slender and long, fourth joint entire. Claws simple.

The anterior tarsi of the male are merely a little stouter than those of the female and somewhat more ciliate.

But one genus constitutes this tribe, *Ega*, represented in our fauna by two species, *Sallei* from the Gulf States, *lætula* from California. In the first the elytral grooves or striæ do not extend behind the middle, and the three dorsal punctures are faintly indicated; in the second the striæ extend at least two-thirds of the elytra and no dorsal punctures are visible. They are gregarious, and run upon the soft mud of the river bank.

Tribe XXVI.—**LEBIINI.**

Antennæ slender, rarely slightly thickened, arising under a slight frontal ridge, the condyle usually exposed, usually with three basal joints glabrous, sometimes however but two or four. Head oval, constricted to a neck or not, with two supra-orbital setæ, front either parallel or with convergent sides, clypeus with a setigerous puncture each side. Eyes round or oval, moderately prominent, very narrowly separated from the mouth beneath. Labrum usually broader than long, sometimes prolonged covering the mandibles; either truncate or emarginate, and sexsetose in front. Maxillæ slender, hooked at tip, rather obtusely in *Tetragonoderus*, ciliate or spinulose within, rarely toothed behind the tip (*Eucærus* and *Tetragonoderus*), the apex ciliate in many genera; outer lobe biarticulate, but otherwise variable; the palpi variable in form, from slender to securiform. Mentum more or less deeply emarginate; the epilobes always distinct, the bottom of the emargination either without tooth or with a tooth of variable form; ligula and paraglossæ very variable; the palpi also variable, the terminal joint equal to the preceding or longer, the latter bisetose in front (except in some *Cymindis*). Thorax variable in form, sides distinctly margined, and with a seta at the side and at the basal angle. Elytra truncate at tip in a variable manner, the margin acute, entire, and narrowly inflexed, without internal plica, the base margined. Prosternum usually obtuse at tip, rarely acute or prolonged (*Cyclosomus*). Mesosternal epimera narrow, sometimes almost entirely concealed by the episterna. Metasternal epimera distinct; the posterior coxæ contiguous. Legs usually slender, not very long, tibiæ slender, the terminal spurs moderate or short, rarely long (*Tetragonoderus*, *Nemotarsus*), simple, rarely finely serrulate along their margins (*Tetragonoderus*, etc.). Tarsi variable in form, the fourth joint narrow, emarginate, or deeply bilobed, the claws usually pectinate or serrulate, sometimes however simple.

The sexual characters are variable. The anterior tarsi are often very nearly equal in the sexes, sometimes with three or four joints slightly dilated in the male; rarely the middle tarsi are dilated (*Pinacodera*). The anal segment has usually more setæ in the female than in the male.

Eucærus, which will be found in one of the extremes of the following table, is one of those unfortunate genera which have never been allowed to remain for any length of time in any one position. At its beginning it was placed near the Harpali, thence (Class. Col. N. A., p. 22), it was removed and made part of a rather composite tribe, and placed near the Lachnophori. Chaudoir accepts this view. While it is doubtless an osculant form it seems more nearly allied to the present series than to *Lachnophorus*.

The following table will enable our genera to be recognized:—

Tibial spurs very long.
  Head not constricted; the tibial spurs finely serrulate. Ungues simple or finely serrulate. **Tetragonoderus.**
  Head constricted; tibial spurs simple. Ungues with long pectination. **Nemotarsus.**

Tibial spurs short or at most moderate in length.
A.—Mandibles with distinct scrobes.
  A–a.—Antennæ with at least three glabrous joints.
    b.—Head constricted behind the eyes. **Lebia.**
    b b.—Head not constricted.
      c.—Labrum large, prominent, covering in great part the mandibles.
      d.—Antennæ with three glabrous joints; middle tibiæ of male incised within near the tip. **Coptodera.**
      d d.—Antennæ with four glabrous joints; middle tibiæ of male not incised. **Phlœoxena.**
    c c.—Labrum moderate, not large.
      e.—Tarsi slender, fourth joint entire.
      f.—Labial palpi slender.
      g.—Thorax truncate at base.
        Mentum not toothed, ungues serrate. **Dromius.**
        Mentum toothed, ungues simple. **Apristus.**
      g g.—Thorax slightly lobed at base, ungues serrate.
        Mentum not toothed. **Blechrus.**
        Mentum with a small emarginate tooth. **Metabletus.**
      f f.—Labial palpi thick, oval; ungues more or less serrate. **Axinopalpus.**
    e e.—Tarsi with the fourth joint emarginate or bilobed.
      h.—Ungues simple. **Tecnophilus.**
      h h.—Ungues serrate.
      i.—Mentum not toothed, fourth tarsal joint deeply bilobed. Tarsi hairy above. **Euproctus.**
      i i.—Mentum toothed.
      j.—Thorax truncate at base.
      k.—Tarsi with fourth joint bilobed. **Callida.**
      k k.—Tarsi with fourth joint emarginate.
      l.—Tarsi not hairy above.
      m.—Last joint of labial palpi more or less triangular or securiform.
      n.—Thorax with the base oblique each side, the sides narrowly margined. **Philophuga.**
      n n.—Thorax with base squarely truncate, the sides rather widely margined, especially posteriorly. **Plochionus.**

m m.—Terminal joints of both palpi similar, more or less cylindrical, truncate. **Pinacodera.**

l l.—Tarsi hairy above. Penultimate joint of labial palpi usually with more than two setæ. **Cymindis.**

j j.—Thorax lobed at middle of base. Tarsi hairy above. Last joint of labial palpi securiform. **Apenes.**

A–b.—Antennæ with less than three joints glabrous. Mentum not toothed. Terminal joint of palpi ovate, acuminate at tip and pubescent. Ungues simple. **Eucærus.**

B.—Mandibles without scrobes. Mentum not toothed.

Ungues simple, fourth tarsal joint not dilated. **Pentagonica.**

Ungues pectinate, fourth tarsal joint bilobed. **Onota.**

Tribe XXVII.—HELLUONINI.

Antennæ moderate in length, rather stout, usually compressed, arising under a distinct frontal plate, all the joints more or less pubescent, two or four at the base less densely, first joint stout, equal in length to the next two. Head broadly oval, not narrowed in front of the eyes, with a distinct neck more or less abruptly formed, clypeus moderately prolonged, a setigerous puncture at each side, front with two supra-orbital setigerous punctures. Eyes round, moderately prominent, close to the mouth beneath. Labrum usually large and prominent, more or less concealing the mandibles, sexsetose in front. Mandibles stout, arcuate, rarely prominent, acute at tip. Mentum broad, deeply emarginate, usually toothed; ligula prominent, bisetose at tip, the paraglossæ adherent to the sides, rarely (*Polystichus*) longer than it, and usually semicorneous; the palpi of moderate length, the terminal joint elongate-oval or fusiform and obtuse at tip, the penultimate bisetose in front. Maxillæ hooked at tip, ciliate or spinous within, the outer lobe rather stout, biarticulate, the palpi stout, the terminal joint oblong-oval, truncate at tip, more or less flattened. Thorax more or less cordate, sides and hind angles with a distinct setigerous puncture. Elytra oblong, truncate at apex, base not margined, sides narrowly inflexed, margin entire, disk striate or broadly sulcate, without dorsal punctures. Prosternum not prolonged. Mesosternal epimera narrow. Metasternal epimera distinct; the posterior coxæ contiguous. Legs moderate in length, the anterior femora more or less clavate. Tibiæ sometimes (*Helluomorpha*) compressed, and finely bicarinate on the outer edge, the anterior rather stout and broad, deeply emarginate within, spurs moderate in length. Tarsi moderate in length, usually ciliate above, the fourth joint either entire, emarginate, or even bilobed. Claws simple.

The anterior tarsi of the male are rarely broader than the female.

The form of the ligula has been almost the entire reliance in the separation of this tribe from the other Truncatipennes, but the method usually adopted in describing the ligula as having no paraglossæ is entirely erroneous.

One genus, Helluomorpha, alone is represented in the Atlantic region by six species. The labrum is large, concealing the mandibles, and the antennæ are strongly flattened. The species are elongate, hairy, coarsely punctured, brown insects, found under stones and bark.

HARPALINÆ UNISETOSÆ.

This section is not by any means as large as the preceding, the tribes numbering only a third, and the genera even less proportionately numerous. The essential character of this section is the presence of but one supra-orbital seta. This carries with it the tendency to a loss of the seta at the hind angle of the thorax, in fact the presence of this seta, either at or near the hind angle, is more of an exception here than its absence in the *Harpalinæ bisetosæ.*

The elytral plica exists in some of the tribes here, and in about the same proportion as in the preceding section, and it is by this means that we can trace some affinity with Pterostichini on the one side or Lebiini on the other.

The setigerous puncture on the outer side of the mandible is also observed here in a relatively greater number of tribes, but in far fewer genera.

Mesosternal epimera usually wide, sometimes nearly as wide as the episterna, elytra truncate. Mandibles with setigerous puncture. Posterior coxæ often separated, the first ventral segment visible between them. XXVIII. BRACHYNINI.

Mesosternal epimera very narrow and indistinct, elytra always entire.
  Mandibles with setigerous puncture on the outer side. Abdomen pedunculate. Posterior coxæ contiguous or but narrowly separated. XXIX. BROSCINI.
  Mandibles without setigerous puncture.
    Posterior coxæ distinctly separated.
      Body pedunculate. Elytra not margined at base. XXX. ZACOTINI.

Posterior coxæ contiguous.
  Elytral margin more or less interrupted and with an internal plica. Antennæ with three glabrous joints.
    Anterior tarsi of male with three, rarely four, joints, spongy pubescent beneath. Elytral plica feeble. XXXI. CHLÆNIINI.
  Elytral margin not interrupted, no internal plica. Antennæ with two, rarely with three, glabrous joints. The male tarsi variable. XXXII. HARPALINI.

Tribe XXVIII.—**BRACHYNINI.**

Antennæ slender, the condyle of the basal joint exposed, two basal and a portion of the third joint glabrous. Head gradually narrowed behind the eyes forming a neck, front with one supra-orbital seta, clypeus moderately prolonged. Labrum broad, truncate. Eyes oval, oblique, narrowly separated from the buccal opening. Mandibles stout, feebly arcuate, and with a setigerous puncture externally. Maxillæ hooked at tip, ciliate within and at the tip, the outer lobe slender, with equal joints, the palpi moderate, the last two joints more or less pubescent. Mentum moderately broad, emarginate, toothed or not; the ligula in great part membranous, the oval centre corneous and bisetose at tip, the paraglossæ broad, adherent, and ciliate at tip; the palpi moderate in length, the second joint longer than the last and plurisetose in front. Thorax with short marginal setæ, no special seta at the hind angle. Scutellum distinct. Elytra not margined at base, narrowly inflexed, margin not interrupted, no internal plica, apex truncate and with a membranous border, disk not striate and without dorsal punctures. Prosternum not prolonged at tip. Mesosternal epimera broad. Metasternal epimera distinct, the posterior coxæ either contiguous or separated. Middle and posterior tibiæ finely ciliate or spinulose externally, the anterior deeply emarginate within, the inner spur at the summit of the emargination. Tarsi slender, the fourth joint feebly emarginate, the anterior of the males with three joints feebly dilated and squamulose beneath.

The only genus occurring in our fauna is *Brachynus*, occurring on both sides of the continent. In the general diagnosis the posterior coxæ are said to be either contiguous or separated. It will be observed in the larger species that while many of the specimens have the coxæ plainly contiguous, the smaller species have them separated, and in the case of *carinulatus* rather widely, so that in the present genus a character becomes insignificant, which in other parts of the series is of the highest importance.

On the other hand, the apparent increase of the number of the abdominal segments to seven or eight has been exaggerated in value very far beyond its importance. If we examine the species of any of the genera which emit from the anus a liquid, whether explosively or not, it will be seen that the structure in no way differs from that of *Brachynus*, except that the latter has a broader sixth segment, which, being truncate or slightly emarginate, allows the genital armature to become more plainly visible as a segment. *Galerita* and any of the larger Dryptini will illustrate this structure.

The species of *Brachynus* are found under logs and stones, usually in damp situations and often in colonies. Those in our fauna have the head, thorax, and legs yellowish, the elytra blue. They have not yet been separated in any satisfactory manner.

Tribe XXIX.—**BROSCINI.**

Antennæ moderate in length, with a variable number (three to five) of basal joints glabrous. Head not constricted, but usually gradually broader behind the eyes, front not sulcate, one supra-orbital setigerous puncture, and often with a post-orbital cicatrix. Eyes oval, distant beneath from the mouth. Clypeus moderately prolonged with lateral setæ. Labrum moderately prominent, slightly emarginate. Mandibles arcuate at tip with a setigerous puncture on the outer side. Maxillæ with the inner lobe hooked at tip, ciliate or spinulose within, outer lobe moderately stout, biarticulate; the palpi rather stout, the last joint longer than the third, elongate-oval or fusiform. Mentum broad, deeply emarginate, toothed or not; the ligula moderately prominent, truncate and bisetose at tip, the paraglossæ adherent, sometimes free for a short distance, and rarely longer than the ligula; the palpi rather stout, the last joint a little longer than the second, more or less oval in shape (impressed beneath in *Miscodera*), the second joint bisetose in front. Thorax more or less ovoid, the sides narrowly margined and bisetose, the posterior seta in front of the hind angles. Body pedunculate, scutellum in the peduncle. Elytra not margined at base, sides narrowly inflexed, margin not interrupted posteriorly, but with a short internal plica, disk without dorsal punctures. Prosternum obtuse at tip. Mesosternum rather wide, oblique, the epimera narrow. Metasternal epimera distinct, posterior coxæ contiguous or very narrowly separated. Legs moderately stout, the tibiæ not spinulose externally, the anterior moderately dilated at tip, deeply emarginate within, the inner spur at the upper angle of the emargination. The tarsi filiform, fourth joint simple.

The anterior tarsi of the males may have four, three, or two joints dilated, clothed beneath usually with hairs, rarely squamules.

The Broscini have a slight sub-ocular ridge at the side of the head. This ridge is well marked in the Cicindelidæ, but has not been observed elsewhere in Carabidæ.

Two species of Miscodera occur in our fauna; *M. arctica* is common to the northern parts of both continents; *M. insignis* is peculiar to Alaska.

Tribe XXX.—**ZACOTINI.**

Antennæ filiform, arising under a slight frontal margin, first joint stouter, cylindrical, third a little longer than the following, the first four joints glabrous. Head subquadrangular, slightly constricted at a distance behind the eyes, temporal cicatrix distinct, front with one supra-orbital seta, clypeus slightly prolonged and with the usual setigerous puncture each side. Eyes round, moderately prominent, and distant from the buccal fissure beneath. Labrum transverse, feebly emarginate, sexsetose in front. Mandibles not prominent, arcuate at tip only, acute and without setigerous puncture externally. Maxillæ ciliate within, hooked at tip, the outer lobe rather stout, biarticulate; palpi stout, the last joint shorter than the preceding, oval, and truncate at tip. Mentum transverse, emarginate, and acutely toothed; the epilobes acute and prominent; ligula moderately prominent, tip arcuate and free, with two setæ, paraglossæ free for a short distance at tip, which is acute, shorter than the ligula; palpi moderate, third joint elongate-triangular, slightly arcuate, truncate at tip, the preceding joint shorter and bisetose in front. Thorax ovate, slightly constricted behind, margin distinct, two lateral setæ, one near the middle, one in front of base. Body pedunculate, scutellum not visible. Elytra oblong-oval, humeri rounded, base not margined, sides narrowly inflexed, margin entire, not interrupted posteriorly without internal plica. Prosternum not prolonged. Mesosternum obtuse in front, rather widely separating the coxæ, the epimera distinct, broader externally. Metasternum short, body apterous, epimera distinct, posterior coxæ slightly separated. Legs rather slender, middle tibiæ slightly spinulose externally near the tip, anterior tibiæ moderately dilated, emarginate internally, the inner spur at the upper angle of the notch. Tarsi slender, the fourth joint simple.

The males have four joints of the anterior tarsi quadrangularly dilated, the first three with squamiform papillæ beneath, the middle tarsi are not dilated, but the first two joints are squamulose beneath.

In size and general appearance (except the head) *Zacotus* resembles *Promecoderus concolor* Germ., and seems to form a tribe with nearly equal relations with the Broscini and Peleciini, and to indicate that these two tribes are far more closely allied than has been yet admitted.

But one species, *Z. Matthewsii* Lec., occurs in Washington Territory and Vancouver. It lives near small streams in dense woods; the color is piceous with bright æneous or cupreous surface lustre.

Tribe XXXI.—CHLÆNIINI.

Antennæ slender, rarely slightly compressed (*Evolenes*) arising under a slight frontal ridge, the three basal joints glabrous. Head not narrowed behind the eyes to a neck, one supra-orbital setigerous puncture. Clypeus more or less prolonged between the mandibles, often without the lateral seta. Eyes oval, moderately prominent, more truncate behind in the Oodes. Labrum transverse, truncate, or emarginate, with three, four, or six setæ in front. Mandibles feebly arcuate, without setigerous puncture externally. Maxillæ slender, hooked at tip, ciliate or spinous within, the outer lobe usually slender, biarticulate (except in *Callistus*); the palpi moderately long, the terminal joint variable in form. Mentum broad, usually emarginate and toothed, sometimes feebly bisinuate in front (*Evolenes*) or even almost truncate (*Brachylobus*), the basal suture always distinct; ligula moderately prominent, usually free at tip and bisetose, the paraglossæ membranous more or less free at tip, longer or not than the ligula, elongate and slender in *Anomoglossus* and ciliate within; palpi moderate in length, the terminal joint variable, the penultimate bi- or plurisetose or even without setæ. Thorax variable in form, the setæ of the margin either slender or entirely wanting. Body not pedunculate, scutellum distinct. Elytra margined at base, sides narrowly inflexed, margin interrupted posteriorly and with a distinct internal plica, surface striate, without dorsal punctures. Prosternum prominent at tip, but not prolonged. Mesosternum rather widely separating the coxæ, grooved in front, the epimera narrow. Metasternal epimera distinct, posterior coxæ contiguous. Legs moderate, middle and posterior tibiæ finely spinulose externally, the anterior moderately broad, a few stout spines at the outer apical angle, within deeply emarginate, the inner spur at the angle of the emargination. Tarsi slender, claws simple.

The males have three or four joints of the anterior tarsi dilated and densely spongy beneath.

This tribe is divided into two groups:—

- Eighth stria of the elytra with its ocellate punctures distant from the margin, the ninth stria very distinct. Eyes regular in outline not truncate behind. CHLÆNII.
- Eighth stria very close to the margin, the ninth indistinct. Eyes truncate behind. OODES.

Group I.—**Chlænii.**

In the first group three genera occur in our fauna:—

- Mentum with distinct lateral lobes.
  - Toothed in the bottom of the emargination. **Chlænius.**
  - Not toothed. **Anomoglossus.**
- Mentum truncate in front. **Brachylobus.**

Group II.—**Oodes.**

In the second group the genera represented in our fauna are recognized by the following characters:—

- All the tarsi pubescent beneath.
  - Anterior tarsi ♂ with four joints not widely dilated. Clypeus with a setigerous puncture each side. Labrum 6-setose. **Lachnocrepis.**
- Posterior tarsi not pubescent beneath.
  - Anterior tarsi ♂ with four joints dilated, the first three spongy beneath. Clypeus without setigerous punctures. Labrum with six setæ, the four inner small and close, the outer large and erect. **Anatrichis.**
  - Anterior tarsi ♂ with three joints dilated and spongy.
    - Second joint of labial palpi without setæ in front. **Oodes.**
    - Second joint of labial palpi bisetose in front. **Evolenes.**

Evolenes has the antennæ somewhat flattened. The clypeus has a large setigerous puncture each side, and the labrum six. It is the only genus in the group in which the second joint of the labial palpi has the setæ almost universally observed in the Carabidæ.

Oodes, as above defined, contains *Oodes*, *Stenous*, and *Crossocrepis* of Chaudoir. In *Oodes* proper the clypeus has a setigerous puncture each side, and the labrum six in front, in the other two there are no clypeal punctures, and three only on the labrum.

The inconstancy of the setigerous punctures in the Oodes is remarkable, the only one absolutely present in all is the one over the eye. The entire absence of these punctures from the side of the thorax would be an excellent means of separating the Chlænii and Oodes, were it not that even in *Chlænius* these punctures, although constantly present, are often lost in the general punctuation, and the seta is small and hair-like, and not very evident, except in the glabrous species.

It may be observed in *Chlænius* that those species in which the males have not the pubescent space near the tip of the middle tibiæ, that is, those of division A (Horn, Trans. Amer. Ent. Soc., v. 1876, p. 257), are without setæ on the second joint of the labial palpi, while division B (and *Anomoglossus* with its long second joint) is plurisetose.

Chlænius is universally distributed in our fauna; *Oodes elegans* occurs in Arizona; the other genera are peculiar to Atlantic North America.

Tribe XXXII.—HARPALINI.

Antennæ usually slender, arising under a slight frontal ridge, the two basal joints glabrous, sometimes also the greater part of the third. Head often large, usually moderate, not narrowed to a neck, with one supra-orbital seta. Eyes usually moderate in size, narrow, never very convex, not distant beneath from the mouth, sometimes, however, small and distant. Clypeus slightly prolonged between the mandibles, with one or two setigerous punctures near the apical margin. Labrum moderately prominent, truncate, or emarginate, plurisetose in front. Mandibles stout, rarely (*Glyptus*) prominent, acute at tip, and without setigerous puncture externally. Maxillæ hooked at tip (except in *Glyptus*), although rather feebly in some genera (*Aristus*), the inner margin ciliate, the outer lobe usually slender, as long as the inner lobe but shorter in *Glyptus*, biarticulate, the terminal joint often longer than the first, the palpi moderate, the terminal joint slightly oval or subcylindrical, sometimes slightly pilose. Mentum broad, emarginate, with or without a median tooth, which is sometimes as long as the lobes (*Aristus*); ligula prominent, variable in form, the tip free (usually bisetose) and in most cases dilated, the paraglossæ variable in form, always as long as, frequently longer than the ligula, and very often ciliate at tip; the palpi moderate in length, the terminal joint never longer, and very rarely equal to the preceding, which is plurisetose, except in *Glyptus*, where there are no setæ. Thorax variable in form, with a lateral seta, but none in the hind angles. Body sometimes subpedunculate, scutellum distinct. Elytra usually margined at base, sides narrowly inflexed, the margin variable, but never with an internal plica, surface striate, often densely punctured, either pubescent or glabrous, with or without dorsal punctures. Prosternum not prolonged. Mesosternum separating the coxæ, the epimera very narrow. Metasternal epimera distinct, the posterior coxæ contiguous. Legs variable, often stout and fossorial. The middle and posterior tibiæ often spinulose or even serrulate externally, the anterior with the outer apical angle spinous or prolonged obtusely. The tarsi variable in structure.

Sexual characters variable.

From the great number of genera which have been established on trivial characters, this tribe has become the most difficult to study of any in the Carabidæ, excepting possibly the Lebiini. Characters drawn from the ligula and paraglossæ have here, as in the Lebiini, been pushed to an extreme, and the study of them from dissections proves that in both tribes they have not the great value which has been assigned to them.

The tribe Harpalini may be divided primarily by the tarsal vestiture of the male into three series, one of which may be again divided, forming four groups, of which but three are represented in our fauna.

Anterior tarsi of male pilose or spinous beneath, usually feebly, sometimes not at all dilated.	DAPTI.
Anterior tarsi of male dilated and biseriately squamulose.	HARPALI.
Anterior tarsi of male densely spongy pubescent beneath.	ANISODACTYLI.

The tarsal vestiture, above outlined, appears to be the only means yet devised for the division of the tribe. It is not, however, without exceptions, as certain Dapti, *Geopinus* for example, have a few squamules on the under side of the anterior tarsi, and certain *Acinopus* have the anterior tarsi feebly dilated, and the squamules rudimentary.

Group I.—**Dapti.**

The genera of this group present certain special characters which require passing mention. In the majority of the genera the eyes are small, and beneath widely separated from the buccal fissure. In *Daptus*, *Polpochila*, *Agonoderus*, and *Pogonodaptus* the eyes are normal in form, and close to the mouth beneath. The mandibles of *Geopinus*, *Daptus*, and *Pogonodaptus* are normally decussating, the left overlapping the right with its tip somewhat chisel-shaped and deeply strigose in the first two genera, acute and not strigose in the third. In all the other genera mentioned below, the right mandible appears to be shorter than the left, and is capable of being drawn more within the mouth, its chisel-shaped tip passing along the obtuse inner edge of the left reminding one of the form of the articulation of the lower mandible of the Parrot on the upper, or like the incisor teeth of a Rodent.

Daptus has also a small triangular plate over the insertion of the antennæ as observed in *Ditomus*.

The anterior tibiæ are usually gradually dilated to apex and spinous at tip externally, but in *Geopinus* the outer angle is expanded in a plate, spinulose on its edge, resembling in general form that of *Glyptus*. In *Nothopus* the outer angle is more narrowly prolonged and rather deeply sinuate above the tooth. *Daptus* has a thicker anterior tibia, the outer angle rounded, the posterior face rather closely beset with spinules as in *Phaleria*, indicating fossorial habits.

The following table will enable our genera to be recognized:—

Mandibles prominent, decussating. Body subpedunculate.
  Mandibles deeply strigose at tip. Anterior tibiæ decidedly fossorial.
    Eyes small. Mentum with a seta at hind angles. **Geopinus.**
  Mandibles acute at tip, not strigose. Anterior tibiæ not fossorial. No scutellar stria. Head with deep arcuate impression each side. **Pogonodaptus.**
Mandibles not prominent, at most feebly decussating. Body not pedunculate.
  Outer apical angle of anterior tibiæ prolonged. **Nothopus.**
  Outer apical angle of anterior tibiæ not prolonged.
    Mentum toothed.

Apical angles of joints 1—3 of anterior tarsi prolonged in spines.
  Eyes large. Hind angles of thorax obtuse or rounded. **Polpochila.**
Apical angles of joints of anterior tarsi not prolonged. Eyes small.
  Hind angles of thorax sharply rectangular. **Cratacanthus.**
Mentum not toothed.
  Posterior tarsi with the first joint a little longer than the second, outer edge of middle tibiæ rather flat, and with a double row of spinules closely placed.
    Eyes relatively small, distant beneath from the mouth; elytra with numerous dorsal punctures. **Piosoma.**
    Eyes relatively large, very narrowly separated from the mouth: elytra with one dorsal puncture. **Agonoderus.**
  Posterior tarsi with the first joint nearly as long as the next three. Middle tibiæ with the spinules sparsely placed, in the male arcuate and serrate on the inner side.
    Eyes rather small; three series of elytral punctures. **Discoderus.**

The sexual characters are not very well marked. The males have four joints of the anterior tarsi feebly dilated (two in *Polpochila*) and rarely (*Discoderus*) with a few squamules beneath. The latter genus has the middle tibiæ distinctly arcuate and serrate within. In *Cratacanthus* the right mandible of the male has the basal portion which borders the clypeus more elevated, while the upper edge in front of this is much depressed; a similar structure is observed in *Acinopus*.

Agonoderus and *Pogonodaptus* are the only genera observed in which the penultimate joint of the labial palpi is bisetose. *Nothopus* and *Piosoma* have the ligula quadrisetose, and the paraglossæ ciliate externally at tip, the upper surface is also sparsely setose in these genera. In *Cratacanthus* the paraglossæ are very broad, and lie behind the ligula, so that when viewed from the front the entire ligula has very much the appearance of that of a Lebiide.

Pogonodaptus has been established on a small species from Texas, resembling *Daptus* and somewhat also *Pogonus* (Pogonistes).

Group II.—**Harpali.**

It is extremely difficult to draw the line with accuracy between this group and the Dapti, and it is probable that other characters will be found which will separate the genera, but which will not allow the groups to remain as at present constituted.

The genera are not easily separable, unless both sexes are at hand. The following table is the best we can devise for those represented in our fauna.

Antennæ with two glabrous joints only.
  Labial palpi with the terminal joint shorter than the preceding, the latter plurisetose in front.
    Anterior tarsi dilated in both sexes; the first joint only, however, in the female.
      Body pedunculate. First joint of anterior tarsus of male not squamulose beneath, the middle tarsi not dilated nor squamulose. **Stenomorphus.**
      Body not pedunculate. First four joints of anterior and also of the middle tarsi squamulose beneath. **Gynandropus.**
    Anterior tarsi dilated in the male only.
      First joint of hind tarsus not longer than the two following, elytra with at most one dorsal puncture. **Harpalus.**
      First joint of hind tarsus equal to the next three, elytra with three series of dorsal punctures. **Selenophorus.**
    Labial palpi with the terminal joint equal to or even a little longer than the preceding, which is bisetose only.
      Penultimate joint of anterior and middle tarsi of male bilobed, the middle tarsi dilated. **Stenolophus.**
      Penultimate joint simply emarginate, the middle tarsi not or very feebly dilated.
        Mentum not toothed. **Acupalpus.**
        Mentum toothed. **Bradycellus.**
Antennæ with three glabrous joints.
        Thorax without setigerous puncture in hind angle.
          Mentum toothed. **Tachycellus.**

Of these genera *Harpalus*, *Stenolophus Acupalpus* and *Bradycellus* are represented on both sides of the continent; *Stenomorphus* is tropical, extending into Texas and Arizona; *Agaosoma* Mann. is synonymous; *Gynandropus* is peculiar to Atlantic North America.

Group III.—**Anisodactyli.**

The essential character of this group is that the dilated tarsal joints of the male are spongy pubescent beneath.

The genus *Anisodactylus* not only gives its name to the group but is also its central idea. From this, as a starting point, the relative values of the genera may be discussed, as a convenient point of comparison.

In a review of our species of the genus, published by Dr. Horn (Proc. Amer. Philos. Soc., 1880, p. 162, etc.), will be found a full discussion of the characters which serve to divide the species in subgenera and lower groups—the trifid anterior tibial spur, the spur broader at middle and the slender spur. In two species, *harpaloides* and *opaculus*, the first joint of the anterior tarsus of the female is dilated, and in the former that joint is somewhat prolonged under the second.

XESTONOTUS.—Anterior tarsi broadly dilated in the male, the first four joints densely spongy pubescent beneath, middle tarsi with four joints less widely dilated and spongy pubescent beneath, the first entirely glabrous, posterior tarsi slender and long. Elytra with one dorsal puncture. The ligula is rather narrow and parallel, the paraglossæ broad and a little longer than it.

Comparing the differences between the ligula and paraglossæ with those observed in *Harpalus* there does not seem any valid reason for retaining the genus apart from *Anisodactylus*, and the species will find a suitable position between the *amaroides* and *sericeus* groups of that genus.

AMPHASIA.—Here the characters are essentially those of *Anisodactylus sericeus*. The paraglossæ are similar in form to Anisodactylus, and merely a little longer.

EURYTRICHUS —The sexual characters and those derived from the posterior tarsi are precisely those of *Anisodactylus cœnus* and *lætus*. The paraglossæ are a little broader than in typical *Anisodactyli*.

SPONGOPUS.—The ligula and paraglossæ are intermediate in structure between the typical *Anisodactylus* and *Xestonotus*, and the ligula is free for a greater distance at tip. The sexual characters are those of the *amaroides* group. The posterior tarsi are however slender. The elytra being punctulate and with a single dorsal puncture, this species forms an intermediate between the *discoideus* group and *sericeus*.

From the above remarks it would appear that these genera are inseparable from *Anisodactylus*.

It is worthy of note that we may have in *Anisodactylus* more than one setigerous puncture at each angle of the clypeus, while in most Carabidæ there is but one, and even this may be lost.

Sub-Family III.—PSEUDOMORPHINAE.

Middle coxal cavities inclosed by the central pieces of the meso- and metasternum. Head without supra-orbital setæ and with grooves beneath of variable extent for the reception of the antennæ. Eyes in great part superior, very widely separated beneath from the mouth. Legs short, contractile, tarsi slender, rigid.

The genera which compose the present division are the most abnormal of all Carabidæ.

One tribe alone represents the sub-family.

Tribe XXXIII.—**PSEUDOMORPHINI.**

Antennæ usually slender, filiform, arising under a moderately dilated frontal plate, the three basal joints glabrous, received in repose in grooves of greater or less length within the eyes beneath the head. Head short, obtuse, deeply inserted in the thorax, sides of front more or less dilated and infringing on the eyes in front, clypeal suture rarely visible, front without supra-orbital setæ. Eyes oval, not prominent, usually confined almost entirely to the upper side of head, and widely distant from the buccal fissure beneath. Labrum short, transverse, rounded in front, and feebly sexsetose. Mandibles short, broad, arcuate externally, sometimes slightly toothed within. Maxillæ slender, ciliate and spinous within, not strongly hooked at tip, the outer lobe slender, biarticulate with the terminal joint longer; the palpi short and thick, the terminal joint cylindrical, compressed, obliquely truncate at tip. Mentum large, without basal suture, deeply emarginate, toothed or not, the epilobes narrow; ligula and paraglossæ variable in form; the palpi longer than the maxillary, the terminal joint cylindrical and obliquely truncate or securiform. Thorax as broad at base as the elytra, and overlapping them, the lateral margin more or less explanate, and often fimbriate, but without the usual setæ. Elytra oblong, truncate at tip, not margined at base, lateral margin acute, sides narrowly inflexed, but more widely near the base, the epipleuræ proper very narrow, no internal plica, surface at most obsoletely striate without dorsal punctures. Scutellum distinct. Prosternum narrow, usually somewhat prolonged behind the coxæ, the coxal cavities very narrowly closed behind. Mesosternum very narrow between the coxæ, the epimera distinct, not reaching the coxal cavity. Metasternal epimera distinct, posterior coxæ contiguous. Legs short, not visible beyond the elytra, the femora stout, rather deeply channelled beneath, and receiving the tibiæ, the latter slender and with moderate terminal spurs, the anterior tibiæ emarginate within, the inner spur remote from the apex. Tarsi slender, very feebly flexile, the claws slender, feebly arcuate, and simple.

This tribe is represented in our fauna by the genus *Pseudomorpha* with three species; one in the Southern States, the other two in the Pacific region.

The males have at the middle of the fourth and fifth ventral segments a short transverse impression, which is pilose and ciliate; in the females these impressions are wanting. No other sexual differences have been observed.

FAM. III.—**AMPHIZOIDAE.**

Mentum deeply emarginate, with a medial tooth; lobes obtusely rounded; ligula large, quadrate, corneous; mental suture wanting.

Maxillæ with the outer lobe narrow, glabrous, palpiform, but not biarticulate; the inner lobe curved, acute at the apex, sparsely ciliate with spines on the inner side.

Antennæ 11-jointed inserted under the front, behind the base of the mandibles; entirely glabrous, polished.

Prothorax with the epimera and episterna moderately distinct; prosternum produced behind over the mesosternum.

Mesosternum protuberant in front, middle coxal cavities round, closed externally in part by the mes-epimera and met-episterna.

Metasternum truncate behind, not reaching the abdomen, ante-coxal piece short.

Abdomen with six ventral segments, the anterior three connate.

Legs slender, formed for walking; anterior and middle coxæ small globose; coxal cavities of the former not closed; posterior dilated internally, contiguous at the inner margin, extending also to the margin of the body, separating the side pieces of the metasternum from the first ventral segment.

In addition to the characters given above, may be mentioned: the head is broad, obtuse; the eyes very small; the labrum very transverse, sinuate in front; the palpi short, cylindrical; the side suture of the under surface of the prothorax is distinct, the others are nearly obliterated; the prosternum is broadly produced behind the coxæ, and obtusely rounded at tip; the coxæ are not entirely enclosed, but are protected behind by the mesosternum. The latter is deeply concave behind, perpendicular in front, and is almost covered by the prosternum when the thorax is deflexed. The side pieces are diagonally divided, and the epimera reach the coxæ, which are small and round. The metasternum is prolonged and obtusely rounded between the middle coxæ, transversely truncate behind; the side pieces are triangular, the epimera very small; the posterior coxæ are large, flat, rounded behind, extending to the margin of the body, internally contiguous for a space nearly equal to the length of the metasternum, with a quadrate internal dilatation for the insertion of the legs, as in Carabidæ.

The legs are slender, rough with granulated points; the anterior tibiæ are not in the least degree sulcate internally, and have two small terminal spurs; the tarsi are glabrous, the joints rounded beneath; the claws simple. The elytra are twice as broad as the thorax, connate, rounded, not very convex, with nine dorsal furrows, and no marginal one; the apex is slightly sinuate.

The surface is rough, without lustre, and moderately coarsely punctured.

Two species of Amphizoa occur in northern California, Utah, and Vancouver, clinging to logs or stones under the surface of streams. The genus was described under the name *Dysmathes* by Mannerheim, as a Tenebrionide.

FAM. IV.—**HALIPLIDAE.**

Mentum trilobed, lateral lobes short, the median emarginate or entire; ligula prominent, paraglossæ lateral, short; labial palpi with last joint subulate (Haliplus) or conical (Cnemidotus).

Maxillæ bilobed, the outer lobe biarticulate; palpi moderate, the terminal joint as in the labial.

Eyes rounded, entire.

Antennæ inserted on the front, before the eyes, under a slight frontal ridge, 10-jointed, glabrous, filiform.

Prothorax with distinct side pieces, the prosternum wide, prolonged behind the coxæ, the apex broad, the anterior coxæ rounded, their cavities open behind.

Mesosternum short, concealed by the prolonged prosternum, the coxæ small, their cavities closed externally by the epimera.

Metasternum moderate in length, prolonged in front, and widely separating the middle coxæ, posteriorly slightly prolonged and acute between the coxæ, the antecoxal piece entire, the episterna and epimera distinct.

Posterior coxæ contiguous at middle, attaining the inflexed edge of the elytra at sides, furnished with broad plates contiguous internally, which conceal the posterior legs at their basal half, and from three to six ventral segments.

Abdomen with six segments, the anterior three connate.

Legs slender, not natatorial; anterior tibiæ entire, spurs both terminal, posterior femora clavate at base; tibial spurs slender; tarsi five-jointed, slender; claws slender.

This family contains a small number of aquatic genera, which had been associated more or less closely with the Dytiscidæ by the older authors. More recent systematists have made of them a separate family intermediate between the Carabidæ and Dytiscidæ.

The three genera contain species of small size, oval, more or less pointed behind and in front, and very convex; their color is yellowish, more or less spotted with black. The elytra have rows of punctures, varying in number in the genera. The scutellum is not visible. These insects, while subaquatic in habit, swim but feebly, and with little activity.

The three genera are thus separated:—

Terminal joint of the palpi small, subulate:	
Thorax quadrate, with lateral impressed line.	**Brychius.**
Thorax narrowed in front.	**Haliplus.**
Terminal joint of the palpi conical, longer than the third:	
Thorax narrowed in front.	**Cnemidotus.**

Brychius is represented by one species from California, the other two genera are widely diffused, and the species more numerous.

FAM. V.—DYTISCIDAE.

Mentum deeply emarginate, broadly toothed in the middle; lobes somewhat acute; sides rounded, converging in front; gular suture distinct; ligula large, quadrate, corneous.

Maxillæ with the outer lobe biarticulate, the inner curved, acute at the apex, ciliate internally.

Eyes rounded, never emarginate.

Antennæ inserted under the front, behind the base of the mandibles, glabrous, polished, usually filiform, 11-jointed.

Prothorax with the epimera and episterna distinct; prosternum compressed, produced behind and fitting into a cleft or emargination of the metasternum; anterior coxæ protected behind by the mesosternum, subconical.

Metasternum short, pointed behind, but very closely connate with the posterior coxæ, without ante-coxal piece.

Posterior coxæ very large, usually oblique, contiguous at the inner margin, reaching the side of the body, entirely cutting off the ventral segments from the metathorax; internally with a small dilatation for the insertion of the legs.

Abdomen with six ventral segments, the three anterior ones connate, the sixth rounded at tip, usually permitting the seventh internal, but corneous one, to be slightly visible.

Legs ciliate with long hairs, posterior usually compressed, elongated, formed for swimming; tarsi 5-jointed, the fourth joint of the anterior and middle tarsi sometimes obsolete.

In this family are contained aquatic carnivorous insects, having, as will be seen by the above characters, a close relationship to Carabidæ, and in fact only differing by the form of the metasternum, the posterior coxæ, and the natatorial legs. The particular portion of the Carabidæ which approaches most nearly these insects is found in some tribes of the Carabinæ.

The Dytiscidæ, following the system of Dr. D. Sharp, who has in press a very exhaustive memoir on the species of this family, may be divided into two series, by a character somewhat similar to that used so effectively in the primary division of the Carabidæ.

Metathoracic episternum not reaching the middle coxal cavity.
D. FRAGMENTATI.
Metathoracic episternum reaching the middle coxal cavity.
D. COMPLICATI.

Series I.—DYTISCIDÆ FRAGMENTATI.

The genera in our fauna indicate but two tribes; in both of which the scutel is invisible.

Hind coxæ longer near the middle of the body; (prosternum dilated behind, truncate or nearly so.) Noterini.
Hind coxæ longer near the sides of the body; (prosternal process compressed, attaining the metasternum.) Laccophilini.

These species are all of small size; the Noterini are convex, obtuse in front, pointed behind; the Laccophilini are less convex, and of the average form of Dytiscidæ.

Tribe I.—NOTERINI.

Prosternum flat, gradually and convexly flexed in front. 2.
Prosternum sulcate, perpendicular in front. Colpius.
2. Last joint of maxillary palpi emarginate; hind tibiæ less dilated, prosternal process not broader than long. Canthydrus.
Last joint of maxillary palpi truncate, hind tibiæ broader; prosternal process very broad. Hydrocanthus.
Last joint of palpi rounded at tip; prosternal process rounded; metasternum and hind coxæ connate (size very small). Notomicrus.

The species of the second genus, recently established by Sharp, are those referred to *Suphis* in our catalogues, from which they differ by the hind femora at base being contiguous. *Notomicrus* is represented in our fauna by *N. nanulus* (Lec.) from Louisiana. None of this tribe have yet occurred in the Pacific region.

Tribe II.—LACCOPHILINI.

A moderate number of species of Laccophilus, usually spotted, and sometimes so closely allied as to be with difficulty distinguished, represent this tribe in all parts of our country. One of the best characters is that developed by Crotch, which depends on the number of parallel ridges seen on the hind coxæ of the ♂, beginning near the middle at the insertion of the femora, and extending outwards and backwards. These ridges, with their file-like arrangement, constitute a stridulating organ.

Series II.—Dytiscidæ complicati.

The great bulk of the species of the family belong to this series, which differs from all other Coleoptera, except Mormolyce and Amphizoa, by the middle coxal cavity inclosed by *four* distinct pieces, in consequence of the episterna of the *metasternum* entering into the articulation. They are to be regarded as the highest Dytiscide type, in which not only the maximum size and force is exhibited, but also the most perfect development of the oar-like hind legs. The following tribes occur in our fauna. We have somewhat changed the tabular arrangement given by Dr. Sharp of the tribes of this series, so far as they are represented with us.

Prosternum not deflexed between the front coxæ; tarsi distinctly 5-jointed. 2.
Prosternum deflexed; front and middle tarsi 4-jointed, or apparently so. HYDROPORINI.
2. Front tarsi of ♂ with dilated joints forming a round disk. 3.
Front tarsi of ♂ with dilated joints oblong. COLYMBETINI.
3. Posterior pairs of spiracles large, transverse. DYTISCINI.
Posterior pairs of spiracles small. CYBISTRINI.

Tribe I.—HYDROPORINI.

The species are of small size, and very numerous; they are easily known by the 3d joint of the front and middle tarsi deeply lobed, concealing the 4th joint, which, however, is most frequently wanting; the 5th joint is slender, with claws which sometimes vary in form according to sex. The sculpture is also in many instances quite different in the sexes, so that some care must be taken in separating the species.

The genera in our fauna are as follows: the categories 1–4 represent separate groups, for the definition of which, *vide* the great memoir of Dr. Sharp, above mentioned.

Hind coxal cavities not excised. 2.
Hind coxal cavities distant, excised. **Hydrovatus.**
2. First ventral segment connate with the hind coxæ, which are not contiguous. 3.
First ventral segment free. 4.
3. Prosternal process rhomboidal, acute at tip. **Desmopachria.**
Prosternal process oblong. **Bidessus.**
4. Scutel not visible. 5.
Scutel distinct. **Celina.**
5. Elytral ligula distinct, abrupt; metasternum not attaining the mesosternum. **Cœlambus.**
Elytral ligula wanting; metasternum not attaining the mesosternum. **Deronectes.**
Elytral ligula wanting; metasternum attaining the mesosternum. **Hydroporus.**

The elytral ligula is a tongue-like process on the inner face of the side margin of the elytra, for the purpose of making the union between the elytra and the ventral segments more perfect.

The genera are represented on both sides of the continent, but the species are far more numerous in the northern than the southern parts. Several species seem to be common to the two continents.

Tribe II.—**COLYMBETINI.**

Two groups have been defined by Dr. Sharp, as follows:—

Semimembranous side piece of 1st dorsal segment smooth.	AGABI.
Semimembranous side piece of 1st dorsal segment rugose.	COLYMBETES.

Group I.—**Agabi.**

The species are of moderate size, and like those of the following group have the setigerous punctures of the hind femur either conspicuous or absent. Dr. Sharp has, in our opinion, given to this character an undue significance, unworthy of group distinction. As the corrugation of the membranous portion of the first dorsal segment near the spiracle seems to us more important than the presence or absence of the femoral setigerous punctures, we have placed in this group some of the unassociated genera of Dr. Sharp, Copelates, Matus, and Agabetes, and we think that we see in them closer alliances to the genera with which we have associated them, than can be found elsewhere in our fauna.

The genera are as follows:—

	Hind tarsi with equal claws.	2.
	Hind tarsi with unequal claws; joints lobed on the outer inferior edge; elytra with a pubescent spot on the inner face at the apex.	**Ilybius.**
2.	Last joint of palpi normal, not dilated.	3.
	Last joint of palpi emarginate.	**Coptotomus.**
	Last joint of palpi dilated.	**Hydrotrupes.**
3.	Wing of metasternum wedge-shaped, not linear.	5.
	Wing of metasternum linear, deflexed outwardly.	4.
	Hind legs short and stout; elytra not striate.	**Ilybiosoma.**
	Hind legs slender; elytra striate.	**Copelatus.**
4.	Coxal lines fine, sinuate.	5.
	Coxal lines deep, and nearly straight.	**Agabinus.**
5.	Prosternum not sulcate.	6.
	Prosternum sulcate.	**Matus.**
6.	Prothorax not margined.	**Agabetes.**
	Prothorax margined at the sides.	**Agabus.**

Hydrotrupes, Ilybiosoma, and Agabinus, are exclusively Californian, each represented by a single species. Matus and Agabetes have been found only in the Atlantic region, the former also extending to Australia. The other genera are represented on both sides of the continent. Agabus includes Gaurodytes and Anisomera of our lists, which have been separated on insufficient characters. The species of Agabus are numerous, especially in the northern regions, and, although separated by good structural characters, frequently bear a deceptive resemblance to each other.

Group II.—**Colymbetes.**

The species are usually of larger size than those of the preceding group, and may be divided according to sculpture, although additional characters are obvious, which can be referred to in Dr. Sharp's memoir.

Elytra reticulate. **Scutopterus.**

Elytra smooth, or (♀) with coarse short lines, metasternum with deep groove. **Rhantus.**

Elytra transversely strigose, with anastomosing lines (but not in our species) sometimes smooth, metasternum with feeble groove. **Colymbetes.**

The species of Rhantus and Colymbetes occur on both sides of the continent; Scutopterus, thus far, in the Lake Superior and Hudson Bay regions; and in fact the larger number of species are northern, though a few stray into southern California.

Tribe III.—**DYTISCINI.**

The species of this tribe are large, or at least moderate in size, never small, and are easily distinguished by the peculiar dilatation of the front tarsi of the ♂; of which, namely, the first three joints form a circular pallette, with cupules on the under surface, which vary in size and arrangement according to genus and species. The middle tarsi are frequently dilated, the joints being oblong, with variously arranged cupules, or suckers beneath. The last two pairs of abdominal stigmata are usually large, and the rugæ of the membrane around them are well developed.

Our genera may be tabulated as follows :—

Metasternal epimera covered by the elytra. 2.
Metasternal epimera triangular, exposed. **Eretes.**
2. Claws of hind tarsi unequal, the inner one in certain ♀ obsolete. 3.
Claws of hind tarsi equal, or nearly so. 4.
3. Joints of hind tarsi ciliate with flattened hairs on distal margin, hind legs more slender, spurs acute. **Hydaticus.**
4. Hind tarsi ciliate on the distal margin; spurs emarginate at tip. 5.
Hind tarsi not ciliate on the distal margin; spurs acute. **Dytiscus.**
5. Elytra not punctured, partly aciculate in ♀. 6.
Elytra densely punctured, usually 4-sulcate in ♀. **Acilius.**
6. Middle thighs with long setæ. **Thermonectes.**
Middle thighs with short setæ. **Graphoderes.**

Eretes is cosmopolitan, but in this country extends only from California to Kansas. With the exception of Hydaticus, which occurs only in the Atlantic region, the other genera are distributed on both sides of the continent.

Tribe IV.—CYBISTRINI.

This tribe is represented by a small number of species of Cybister, of which there are numerous species in Tropical America.

They are easily known by the small size of the spiracles, especially the posterior two or three pairs. The hind legs are broad and powerful, the tibiæ short, the joints of the hind tarsi without a fringe of flattened ciliæ on the distal margin, and the hind claws very unequal, the inner one being obsolete or wanting in certain ♀ ♀. The spurs of the hind tibiæ are emarginate at tip. The front tarsi of the ♂ have the joints 1–3 dilated into a large circular disk, and the cupules of the under surface are not unequal as in Dytiscini, but similar, and arranged in four rows.

These insects are properly considered by Dr. Sharp as the highest and most complete development of the Dytiscide type; and it is also worthy of remark in this connection, that it is the only one conspicuously better represented in the tropics than in temperate or frigid regions. They are nearly undistinguishable in specific characters, and can be separated most easily by the sexual differences, which are usually quite well defined. The same difficulty in specific definition is to be discerned in the culminating genera, groups, tribes, or families in the higher forms of animal life.

FAM. VI.—GYRINIDAE.

Mentum deeply emarginate; lateral lobes rounded; gular suture distinct.

Ligula large, quadrate, corneous, filling the emargination of the mentum, palpi 3-jointed.

Maxillæ with the outer lobe usually wanting, sometimes slender, not articulated, the inner one curved, ciliate internally, acute at tip; palpi 4-jointed, last joint as long as the others united.

Eyes divided by the sides of the head, upper and lower parts both rounded.

Antennæ inserted under the sides of the front, behind the base of the mandibles, short, thick, third joint auriculate, subsequent ones transverse, last joint elongate.

Prothorax with the prosternum short and carinated, episterna and epimera distinct, the latter large.

Mesosternum very large, rhomboidal, posterior angle emarginate for the reception of the point of metasternum; episterna and epimera entirely connate, attaining the middle coxæ.

Metasternum very short, pointed before and behind, without ante-coxal piece; episterna very large; epimera not visible.

Coxæ, anterior, small, globular; middle, flat, oblique, almost reaching to the posterior coxæ behind; the latter are large, truncate anteriorly, contiguous at their inner margin, extending to the margin of the body, and thus separating entirely the ventral segments from the metasternum; they are dilated internally, and broadly excavated behind for the motion of the hind legs.

Abdomen 7-jointed, the three anterior segments connate, the first suture almost obsolete; the seventh longer than the sixth, rounded at tip.

Anterior legs very long, received in oblique grooves of the pro- and mesosternal segments; tibiæ slender, with one terminal spur; tarsi 5-jointed, of the male sometimes dilated.

Middle and posterior legs short, broad, very much compressed; tibiæ without spurs; tarsi 5-jointed; first joint of middle feet large, triangular; second and third very short; fourth large, triangular; fifth triangular, with two approximate claws. Of the posterior feet of Dineutus the first joint is very large; the others are small, and diminish gradually in size, the last with two very small claws. In Gyrinus the posterior and middle tarsi are nearly alike.

This family is one of the best defined and most distinct of any in the whole order of Coleoptera, and contains a moderate number of species, of an oval form, somewhat attenuated at either end, usually of a very brilliant bluish-black color above, with the punctures reflecting a golden tint.

Their habits are aquatic, but remarkably different from those of the Dytiscidæ; they are usually seen in large numbers on the surface of the water, circling about in labyrinthine curves, and diving but rarely, and only to escape from an immediate danger; when caught, many exhale a milky fluid, having an odor of apples.

The elytra are in two of our genera striate, with rows of punctures; in Gyretes they are without striæ, smooth and shining on the disk, finely punctured and pubescent on the sides. The species of Dineutus and Gyrinus frequently resemble each other very closely.

Our three genera are thus separated:—

Last ventral segment of abdomen depressed, rounded at tip;
  Scutellum distinct. **Gyrinus.**
  Scutellum wanting (labrum transverse). **Dineutus.**
Last ventral segment of abdomen elongated, conical (labrum prominent, scutellum wanting). **Gyretes.**

Gyrinus is widely distributed; *Dineutus* is found in the Atlantic region; *Gyretes*, with but one representative, in Arizona, Texas, and Illinois.

FAM. VII.—HYDROPHILIDAE.

Mentum large, quadrate; gular suture distinct.

Ligula broad, very short, usually concealed, with labial palpi very distant at base.

Maxillæ with two lobes ciliated at the extremity.

Eyes round in all of our genera (emarginate or even divided by the side of the head in some foreign genera).

Antennæ inserted under the sides of the front, behind the base of the mandibles, moderately short, having from six to nine joints, the outer joints forming a sudden club, of which all the joints except the first one are pubescent.

Prothorax with the episterna and epimera not distinct; prosternum very short; anterior coxæ globose, conical, exserted.

Mesosternum moderate, frequently longitudinally elevated; side pieces not divided, extending to the coxæ, which are large, oblique, and flat, prominent only inside of the insertion of the thigh.

Metasternum large, frequently carinate, and produced into a long spine behind; side pieces large, epimera not visible.

Posterior coxæ oblique, flat, extending to the sides of the abdomen.

Abdomen usually with five ventral segments, in Limnebius with seven, and in Cyllidium with but apparently four; segments not connate.

Legs moderate; tibiæ terminated by two large spurs; tarsi five-jointed, the middle and posterior ones sometimes compressed and fimbriate, for swimming. Trochanters not prominent on the inner part of the thigh.

This family contains insects which live on decomposing vegetable matter, though the larvæ are carnivorous and quite voracious; the majority of them are aquatic. Except those of the tribe Helophorini, they are of an oval, convex form, sometimes hemispherical; the elytra are sometimes striate, sometimes without dorsal striæ, but with a distinct sutural stria; sometimes the latter is also effaced. In the species with smooth elytra three irregular series of punctures may be seen on each elytron, as in Dytiscidæ. The scutellum is never wanting. The palpi in most of the genera are very long, but always slender, whence the name *Palpicornes*, given by Latreille to these insects.

According to the proportions of the joints of the tarsi, four tribes are apparent, which may be separated as follows:—

Middle and hind tarsi with the first joint short;
Prothorax narrowed behind, narrower than the elytra. HELOPHORINI.
Prothorax at base as wide as the elytra;
Tarsi compressed; metasternum prolonged into a spine. HYDROPHILINI.
Tarsi not compressed; metasternum not prolonged. HYDROBIINI.
Middle and hind tarsi with the first joint elongated. SPHÆRIDIINI.

Tribe I.—HELOPHORINI.

In this tribe are small aquatic species, of an oblong or elongate form, usually of a pale gray color, more or less tinged with bronze or silver. They are found in small pools, and rise to the surface when the water is made turbid.

Maxillæ with both lobes corneous; antennæ 9-jointed, rarely 7-jointed. Tarsi not natatorial; first joint subconnate with the second, frequently indistinct; 2–4 moderate, subequal, the second in Helophorus somewhat longer than the first. Thorax narrower at the base than the elytra, in Helophorus and Ochthebius marked with five sinuous longitudinal striæ; elytra with ten striæ or rows of punctures, except in Hydræna, where the rows are more numerous.

Sepidulum Lec. is synonymous with Epimetopus: one species occurs in Texas; the other genera occur on both sides of the continent.

Last joint of maxillary palpi longer than the preceding;	
Antennæ 9-jointed; all the palpi moderately long.	**Helophorus.**
Antennæ 7-jointed; labial palpi short.	**Hydrochus.**
Last joint of maxillary palpi shorter than the preceding, subulate;	
Eyes nearly divided.	**Epimetopus.**
Eyes entire.	**Ochthebius.**
Maxillary palpi exceedingly long.	**Hydræna.**

Tribe II.—HYDROPHILINI.

Aquatic species, of an oval or elliptical convex form, olive-black, rarely with the sides of the thorax and elytra yellow, the latter not striate.

Maxillæ with both lobes coriaceous; antennæ 9-jointed; middle and posterior tarsi strongly compressed, fringed internally with long hairs; first joint short, second elongated; meso- and metasternum forming a continuous keel, which posteriorly is prolonged into an acute spine; last joint of the anterior tarsi of the male in some species distorted, with very unequal claws; in the same sex the club of the antennæ is sometimes irregular.

Our two genera may be separated as follows:—

Prosternum small, sulcate; metasternal spine long.	**Hydrophilus.**
Prosternum acutely carinate; metasternal spine short.	**Hydrocharis.**

Both genera are represented on each side of the continent: the latter genus is called *Hydrous* by many European authors, which name is more properly a synonym of Hydrophilus: the species of Hydrophilus differ in the proportion of the last joint of the maxillary palpi: in the larger species the last joint is shorter than the penultimate; in the smaller ones (*Tropisternus*

Sol.) the joints are equal, or the last is a little longer than the penultimate.

The females of this tribe construct a silky cocoon, attached to plants, under the surface of the water.

Tribe III.—**HYDROBIINI.**

Aquatic species, of an oval or hemispherical form; the elytra have sometimes ten striæ (Berosus), or a large number of rows of punctures (Laccobius), but usually only a sutural stria. A foreign genus (Amphiops) is remarkable for having four eyes, like Gyrinus.

Many of the species of this tribe have the same general appearance as those of the preceding tribe, but are readily distinguished by the metasternum not being prolonged behind into a sharp spine. They are all of small size.

Maxillæ with both lobes membranous or coriaceous; antennæ sometimes 7- or 8-jointed, usually 9-jointed; middle and posterior tarsi scarcely compressed, sometimes slightly ciliate with hairs; first joint short, oblique; second elongated; meso- and metasternum not forming a continuous carina, the latter not prolonged into a spine.

The following genera occur in our fauna:—

A.—Labrum visible; epistoma not dilated.	
Last ventral segment entire.	2.
Last ventral segment emarginate.	**Berosus.**
2. Ventral segments not covered.	3.
First and second ventral segments concealed by plates.	**Chætarthria.**
3. Ventral segments five; tip of sixth sometimes visible.	4.
Ventral segments more than six.	**Limnebius.**
4. Antennæ 9-jointed.	5.
Antennæ 8-jointed.	**Laccobius.**
5. Last joint of maxillary palpi shorter than third.	**Philhydrus.**
Last joint of maxillary palpi longer than third.	**Hydrobius.**
B.—Labrum concealed by the dilated epistoma.	**Helopeltis.**

Limnocharis Horn does not differ from Limnebius, which so far has occurred only in California. *Sperchopsis* Lec. must be united with Hydrobius. *Helopeltis larvalis* Horn is found in Florida, Louisiana, Cuba, and Mexico. The other genera are widely distributed.

Tribe IV.—**SPHÆRIDIINI.**

Small terrestrial species, of an oval, convex, or hemispherical form, living in the excrements of herbivorous mammals; the color is usually black, with the elytra frequently spotted or margined with yellow; the elytra have ten rows of punctures or striæ, but in Cyclonotum are entirely without striæ. Our species of Cercyon are not yet properly investigated; several of them have been imported from Europe.

Maxillæ with lobes coriaceous, or submembranous; antennæ 9-jointed in our genera; second joint of maxillary palpi thickened; legs not natatorial; first joint of middle and posterior tarsi elongated.

Except Sphæridium,* all the known genera of this tribe have been found in the United States. They are distinguished as follows:—

Mesosternum narrow;	
Scutel elongate; pygidium visible.	***Sphæridium.**
Scutel equilateral; pygidium covered	
Metasternum produced in front.	**Dactylosternum.**
Metasternum not produced.	**Cercyon.**
Mesosternum and metasternum connate, with a ridge produced in front.	**Cyclonotum.**
Mesosternum very wide;	
Prothorax margined.	**Megasternum.**
Prothorax not margined.	**Cryptopleurum.**

Fam. VIII.—**PLATYPSYLLIDAE.**

Mentum large, transverse flat, emarginate in front, with rounded angles; sides rounded; base strongly trilobed, the lateral lobes are very large, flat, subtriangular processes; obliquely rounded on the outer side, straight on the inner side, gradually narrowed behind, and rounded at the tip; these processes are nearly as long as the middle lobe, separated from it by narrow fissures, and, like it, project far over the gula. Ligula broad, corneous, filling the emargination of the mentum, and projecting beyond it; emarginate in front, without paraglossæ; labial palpi 3-jointed, joints diminishing in thickness.

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* A specimen of the European *Sphæridium scarabæoides* has been found in Canada. The species is undoubtedly introduced, and accidental in occurrence. It is described by Beauvois under the name *S. crenatum.* The genus differs from Cercyon by the antennæ having only eight joints, and by the elongate scutel.

Maxillæ large and strongly made, with two large, flat, thinly ciliated lobes; palpi 4-jointed, last joint fusiform, narrower, but scarcely shorter than the third.

Antennæ 9- (perhaps 10-) jointed, first joint long, cylindrical; second wider, half as long as the first, cup-shaped, fringed with long hairs; the remaining joints form an oval club, with transverse articulations fringed with long hairs. The antennæ are inserted under the edge of the side margin of the head, not far from the hind angles, and are not much longer than the head, when retracted they are received in deep marginal grooves on the dorsal surface of the prothorax.

Mandibles very small, form not yet exactly determined on account of want of material.

Head with front and sides forming nearly a semicircle, occiput with curved outline slightly prominent, fringed with stout depressed spines forming a kind of comb, outside of which the hind angles are fringed with long hairs; between the occiput and the front margin of the prothorax is a deep oblique groove forming an obtuse angle at the middle; labrum very short, transverse, visible chiefly from beneath.

Eyes wanting.

Prothorax trapezoidal, slightly convex, acutely emarginate in front, side margin of notum deeply grooved nearly to the base, where the groove bends inwards and becomes a sinuous line of large punctures; the anterior part of this groove is used as a receptacle for the antennæ; base obliquely sinuate each side, broadly emarginate in front of the scutellum; hind angles rounded, fringed with long hairs. Prosternum very large, flat, subtriangular, concealing the insertion of the coxæ, produced behind into a large, broad process, rounded at tip, and fringed with long hairs; this process extends over the front part of the mesosternum; side pieces apparently separated from the pronotum by suture; coxal cavities open behind.

Mesothorax short, scutel large and triangular; mesosternum obtusely elevated in front, where it is covered by the prosternum, produced behind into a similar broad obtusely rounded process, fringed with long hairs, and projecting in like manner over the front part of the metasternum; side pieces large transverse, finely aciculate, not distinctly divided into episterna and epimera.

Metathorax short; metasternum covered in front by the process of the mesosternum, produced behind into a similar process, fringed with long hair, and projecting over the articulation of the thighs; side pieces large, transverse oblique.

Elytra not longer than the prothorax, truncate, and broadly rounded at tip, slightly imbricate at the suture, entirely without veins, except the usual subsutural one; epipluræ not separated by a line, but with a series of large punctures along the lateral margin. Five dorsal segments and the angles of the one anterior to them are exposed. Wings wanting.

Abdomen: dorsal surface flat, segments not margined at the sides, each with a transverse row of small depressed bristles; spiracles near the hind angles of each segment, equidistant from the lateral and posterior edges; ventral segments slightly convex, six are visible behind the coxæ, which conceal two and the base of the third. Ventral segments straight, except the last two, which are curved, with the convexity forwards; last segment feebly bisinuate at tip.

Coxæ flat, not at all prominent; front ones small, subtriangular with rounded angles; middle coxæ similar, but larger; hind coxæ very large, extending to the sides of the body, flat.

Legs short, trochanters not prominent, thighs stout and compressed; tibiæ compressed, triangular, rounded at tip, armed externally with long spines; terminal spurs long, slender; front tibiæ shorter and broader than the others, being only one-third longer than wide; hind tibiæ more than two and a half times longer than wide, with two small additional spines on the inner edge, above the terminal spurs. Tarsi 5-jointed, slender, somewhat compressed, a little longer than their respective tibiæ; last joint one-half longer than the fourth, claws simple.

Body ovate, elongate, depressed, resembling in miniature a Blatta.

One representative only is known, *Platypsylla castoris* Ritsema, parasitic on the beaver.

Dr. Le Conte has fully discussed the complex relationships of this singular insect, in an illustrated memoir (Proc. Zool. Soc. London, 1872, 799; pl. lxviii). It is also well figured by Westwood (Thesaurus, 194, pl. 37), who, however, considers it as representing a distinct order, Achreioptera.

FAM. IX.—LEPTINIDAE.

Mentum transverse, narrowed to the front, apex truncate with an accessory piece, posterior angles prolonged in slender processes; ligula concealed behind the mentum, the paraglossæ alate, prominent; palpi three-jointed, second longer, third more slender, the basal support visible.

Maxillæ bilobed, the lobes broad, and with long ciliæ on the outer; the palpi four-jointed, the third longer, terminal more slender.

Labrum transverse, connate with the front.

Mandibles in form of thin triangular plates, their apices acute and prolonged.

Antennæ eleven-jointed, slender, arising under the frontal margin.

Eyes entirely wanting (*Leptinus*) or abortive (*Leptinillus*).

Prothorax without distinct side-pieces beneath.

Mesosternum short, the epimera reaching the coxæ.

Metasternum very short, epimera and episterna distinct.

Anterior coxæ small, globular, with distinct trochantin, the cavities open behind, confluent at middle (*Leptinus*) or separated by the somewhat prolonged prosternum (*Leptinillus*).

Middle coxæ small, with large trochantin.

Posterior coxæ narrow, transverse, contiguous at middle.

Abdomen with six ventral segments, the terminal small.

Legs short, flattened tibiæ with terminal spurs, tarsi five-jointed, the first joint of the posterior pair as long as the next two.

In addition to the above characters it may be noted that the clypeal suture is distinct, the head abruptly narrowed behind, but applied closely against the thorax, the hind angles overlapping the anterior angles of the same. The thorax is in shape a little more than a semicircle, apex truncate, base covering the base of the elytra, and broadly emarginate. Scutellum distinct. Elytra conjointly rounded at tip, covering the abdomen, the side margin inflexed at the basal third. The posterior tibial spurs are long and slender.

Two genera are known to inhabit our continent:—

Head entirely without eyes; anterior coxæ contiguous. **Leptinus.**

Head with translucent eye-spots at the hind angles; prosternum separating the anterior coxæ. **Leptinillus.**

The imperfectly developed eyes of the latter genus are situated in the same position in relation to the hind angles of the head as in *Adelops*.

Leptinus is represented by *L. testaceus* Müll., common to Europe and America, living with various small rodents and insectivora, either on their bodies or in the material of their nests, but whether as true parasites or merely as guests has not been determined.

Leptinillus validus (Horn), much larger than the former, is from the Hudson Bay region. Of its habits nothing is known.

FAM. X.—SILPHIDAE.

Mentum quadrate, sometimes slightly emarginate, frequently with a transverse piece between it and the ligula, which is prominent, emarginate, or bilobed; gular suture distinct.

Maxillæ with two lobes, inner one sometimes with a terminal hook.

Eyes finely granulated, sometimes absent.

Antennæ inserted under the margin of the front, behind the base of the mandibles; 11-jointed, rarely 9- or 10-jointed: gradually or suddenly clubbed at the apex, sometimes nearly filiform.

Prothorax with the epimera and episterna not distinct.

Mesosternum very short, side pieces attaining the coxæ.

Metasternum large, nearly truncate behind; episterna long; epimera large, distinct.

Anterior coxæ large, conical, contiguous; middle coxæ oblique, not prominent; posterior contiguous (except in Lyrosoma and all eyeless genera), not extending to the margin of the body, prominent internally, rarely (Clambini) laminate.

Abdomen with six free ventral segments, except in Sphærites, which has but five.

Legs sometimes thick, subfossorial (Necrophorus), sometimes very slender (Pteroloma); tibiæ with large terminal spurs, the anterior ones of the male usually dilated; posterior trochanters prominent, or not; tarsi usually 5-jointed.

This family contains species which live on decomposing animal matter or on fungi; some species of Catops are found only in ants' nests, while the wonderful genus Leptoderus, not yet found in America, lives in caves; it differs remarkably from other genera of the family by the long cylindrical thorax, and the globose, connate elytra. Like nearly all cave insects, it is destitute of eyes.

According to the structure of the coxæ and the form of their cavities the following tribes are defined:—

- Posterior coxæ simple.
  - Anterior coxæ more or less transverse at base and with trochantin.
    - Anterior coxal cavities open behind.
      - Posterior coxæ contiguous. SILPHINI.
      - Posterior coxæ separated.
        - Anterior coxæ prominent; five ventral segments. LYROSOMINI.
        - Anterior coxæ not prominent; six ventral segments. PINODYTINI.
    - Anterior coxal cavities closed behind. ANISOTOMINI.
  - Anterior coxæ cylindric-conic, without trochantin, the cavities closed behind, often widely. CHOLEVINI.
- Posterior coxæ laminate.
  - Anterior coxæ with trochantin, the cavities closed behind. CLAMBINI.

Tribe I.—SILPHINI.

Body never globose, sometimes elongate, usually oval, or even nearly circular, and then usually with a thin margin of the thorax and elytra extending beyond the body; the antennæ are 11-jointed, but with the second joint in one genus (Necrophorus) almost obsolete; with a globose 4-jointed club in that genus, gradually clubbed in the others. Anterior coxæ conical, prominent, contiguous, with large trochantin, the cavities strongly angulate externally and open behind, very widely in *Necrophorus* and *Silpha*, and partially closed in the other genera. Middle coxæ widely separated in these two genera, narrowly separated or even contiguous in the others. Posterior coxæ contiguous. Abdomen with six segments, except in *Sphærites*. Tarsi 5-jointed.

This tribe contains the largest insects of the family; the species of Necrophorus are remarkable for the black elytra, truncate at tip, and ornamented with large red spots. They live on dead animals, and a pair of them will bury the body of a small mammal with wonderful rapidity. Silpha is also easily recognized by the rounded outline and thin margin.

The following table gives in brief the important characters separating the genera:—

Antennæ 10-jointed, capitate, the last four joints forming an abrupt club. Middle coxæ widely separated ; anterior coxæ widely open behind without post-coxal extension of the prothoracic epimera. **Necrophorus.**

Antennæ 11-jointed, either slender or gradually clavate. Middle coxæ moderately separated; anterior coxæ widely open behind without post-coxal process of prothoracic epimera. **Silpha.**

Middle coxæ narrowly separated or contiguous. Anterior coxæ narrowly open, partially closed by a prolongation of the prothoracic epimera.

Epipleural fold wide, the elytra margined at the sides. Last joint of maxillary palpi slender.

Antennæ gradually clavate, not longer than the head and thorax.

Antennæ free at base, not inserted under a frontal margin, first and third joints long. **Necrophilus.**

Antennæ arising under a frontal margin, first joint short, robust, third scarcely longer than the second. **Pelates.**

Antennæ slender, scarcely thicker externally, as long as half the body.

Elytra entire; penultimate tarsal joint simple. **Pteroloma.**

Epipleural fold narrow, the elytra with an extremely narrow margin. Last joint of maxillary palpi ovate. **Agyrtes.**

Antennæ 11-jointed, capitate, the last three forming an abrupt club. Anterior coxal cavities narrowly open behind, partially closed by a slender prolongation of the epimera.

Abdomen with five segments. Elytra truncate. **Sphærites.**

The first three genera are represented on both sides of the continent, Pelates and Pteroloma occur in California and Alaska. Agyrtes contains one species found on both coasts. Sphærites with one species, having an appearance very similar to Hister, is common to northern Europe, Alaska, and Vancouver.

Tribe II.—LYROSOMINI.

Anterior coxæ conical, prominent, contiguous, with a large trochantin, the cavities strongly angulate externally and open behind. Middle coxæ narrowly separated, posterior coxæ separated by an intercoxal process of the abdomen. Abdomen with five segments. Antennæ inserted under a frontal margin, eyes not prominent.

This tribe is distinguished from the Silphini by the separation of the posterior coxæ and from all, except *Sphærites*, by the abdomen with five segments. It seems to occupy an intermediate position between the Silphini and the elongate Cholevini, and is represented in our fauna by *Lyrosoma opacum* Mann., occurring in Alaska.

Tribe III.—**PINODYTINI.**

Anterior coxæ transverse, feebly prominent, contiguous, with large trochantin, the cavities strongly angulate externally and narrowly open behind. Middle coxæ oblique, not prominent, moderately separated, the mesosternum flat, with an obtuse carina which extends also to the metasternum. Posterior coxæ not prominent, separated by a distinct intercoxal process, oval at tip. Abdomen with six segments, the sixth feebly visible, the first moderately long. Antennæ inserted under a frontal margin. Eyes entirely absent.

Pinodytes cryptophagoides, the only known member of this tribe, is a small (2 mm.), oblong-oval insect, castaneous in color, and glabrous. Originally described by Mannerheim (as Catops) from Alaska, it has since been abundantly collected by Mr. Ulke, near Washington, D. C., in the soil and rubbish under decaying stumps.

Tribe IV.—**CHOLEVINI.**

Anterior coxæ cylindric-conic, prominent, contiguous, without trochantin, the coxal cavities feebly or not angulate externally and closed behind. Middle and posterior coxæ variable in position, either contiguous or not. Abdomen with six distinct segments, except in *Colon* where there are but five. Antennæ free at base; no frontal margin

This tribe contains in our fauna insects of small size and usually ovate form; some live on carrion or in fungi, others in ants' nests. The eighth joint of the antennæ is smaller than the seventh, except in Colon.

The genera of this tribe may be divided into groups in the following manner:—

Abdomen with six segments.
  Posterior coxæ distinctly separated, but in a variable degree; elytra usually without sutural stria; antennæ slender and long.
    Head broad, with narrow neck; eyes distinct. PLATYCHOLEI.
  Posterior coxæ contiguous; sutural stria usually deeply impressed; antennæ more or less clavate; head suddenly narrowed behind the eyes forming a neck, occiput elevated in a ridge. CHOLEVÆ.
Abdomen with five segments (often four in ♀).
  Posterior coxæ contiguous; elytra with sutural stria well marked; head oval, not narrowed behind; eyes round and moderately prominent; occiput not elevated. COLONES.

Group I.—**Platycholei.**

This group contains *Platycholeus leptinoides*, an oval, depressed, testaceous species found in California and Nevada. It seems to be our closest approach to Bathyscia.

Group II.—**Cholevæ.**

The species of this group are of small size, oval form, usually narrower posteriorly, the surface finely pubescent, the elytra usually transversely strigose, rarely punctured.

The genera are as follows:—

Mesosternum not carinate, the middle coxæ contiguous, last joint of maxillary palpi as long as the preceding.
  Antennæ serrate; tibial spurs moderate, simple. **Càtoptrichus.**
  Antennæ gradually clavate.
    Tibial spurs moderate in length, simple. **Choleva.**
    Tibial spurs very long, bipectinate. **Prionochæta.**
Mesosternum carinate, coxæ separated; last joint of maxillary palpi short, subulate.
  Antennæ gradually clavate, not longer than the head and thorax; eyes well developed; mesosternal carina moderate. **Ptomaphagus.**
  Antennæ slender, longer than the head and thorax; eyes small; mesosternal carina prominent. **Adelops.**

Catoptrichus, Prionochaeta, and Adelops seem peculiar to our fauna, the first occurs in Alaska, the second in the Atlantic region. Adelops occurs in the caves of the central region, and has been erroneously described as eyeless. Choleva and Ptomaphagus occur also in Europe, and are represented on both sides of our continent.

Group III.—**Colones.**

In our fauna but one genus, Colon, constitutes this group. The species are small, oval, narrower behind, the surface punctured and finely pubescent; they occur on both sides of the continent.

Tribe V.—**ANISOTOMINI.**

Body oval, convex, sometimes hemispherical, sometimes capable of being contracted into a ball. Anterior coxæ conical, prominent, contiguous, with trochantin, the cavities strongly angulate externally and narrowly closed behind. Middle coxæ always separated, but in some narrowly. Posterior coxæ contiguous. Abdomen with six segments subequal in length or with the first a little longer, the sixth usually very short. Antennæ variable in the number of the joints, either ten or eleven, club variable of 3–4 or five joints; arising under a slight frontal margin in all of the genera. Tarsi variable.

This tribe consists of small species, which live either in decomposing fungi or under the bark of dead trees.

- A.—Head without antennal grooves beneath.
- Hind tarsi 5-jointed. Mesosternum not carinate.
  - Antennal club 3-jointed. **Triarthron.**
  - Antennal club 5-jointed. **Hydnobius.**
- Hind tarsi with a less number than five joints. Mesosternum carinate.
  - Tarsi with joints 5—5—4 in both sexes.
    - Antennal club 4-jointed. **Anogdus.**
    - Antennal club 5-jointed. **Anisotoma.**
  - Tarsi 5—4—4 in both sexes.
    - Antennal club elongate, loose, 3-jointed. **Colenis.**
- B.—Head with distinctly limited antennal grooves.
- Antennal club 5-jointed, elongate; tarsi dissimilar in the sexes. **Liodes.**
- Antennal club 4-jointed; tarsi similar in the sexes.
  - Antennæ apparently 10-jointed. **Cyrtusa.**
- Antennal club 3-jointed. Tarsi dissimilar in the sexes.
  - Antennæ 10-jointed. **Isoplastus.**
  - Antennæ 11-jointed.
    - Hind tarsi 4-jointed in both sexes, the mesosternum not carinate between the coxæ. **Agathidium.**
    - Hind tarsi 3-jointed, mesosternum strongly carinate. **Aglyptus.**

Tribe VI.—CLAMBINI.

Body oval, capable of being more or less contracted into a ball. Anterior coxæ conical, moderately prominent, contiguous, with moderate trochantin, the cavities angulate externally and closed behind. Middle coxæ separated by the mesosternum in *Empelus* and by a fine carina in the other genera. Posterior coxæ contiguous with plates covering the thighs, partially in *Empelus* or completely in *Clambus* and *Calyptomerus*. Antennæ of eleven, ten, or nine joints variably inserted, either contiguously to the eyes (in *Clambus*) or distant, but not under a frontal margin. Tarsi four-jointed, tibiæ without spurs.

This tribe consists of very minute species, living in decomposing vegetable matter.

The genera may be thus separated.

Elytra margined at the sides with distinct epipleuræ. Coxal plates narrow.
  Antennæ 11-jointed, club 3-jointed; moderately distant from the eyes at base.
    Abdomen with seven segments. **Empelus.**
Elytra not margined at the sides, without epipleuræ. Coxal plates wide.
  Antennæ 10-jointed, club 2-jointed; arising at a distance from the eyes.
    Abdomen with six segments. **Calyptomerus.**
  Antennæ 9-jointed, club 2-jointed; arising close to the eyes.
    Abdomen with five segments visible. **Clambus.**

Empelus and *Calyptomerus* have the elytra slightly prolonged and obliquely truncate, in *Clambus* rounded at tip not prolonged.

The first two genera occur in Alaska, the second extending also to Lake Superior; Clambus occurs in the Atlantic region and Arizona. The edge of the wings in this tribe is fringed with long hairs, thus showing a relationship, as already observed by Motschulsky, with Trichopterygidæ and Corylophidæ.

FAM. XI.—SCYDMÆNIDAE.

Mentum transverse, trapezoidal; ligula small, corneous, emarginate.

Maxillæ with two ciliate unarmed lobes; palpi long, with the last joint very small.

Antennæ inserted upon the front, at the inner margin of the eyes (except in Brathinus and Chevrolatia), gradually thickened or slightly clavate.

Eyes composed of large lenses.

Prothorax with the side pieces not distinct; prosternum not visible between the coxæ.

Mesosternum elongate, triangular, more or less carinate, side pieces reaching the coxæ.

Metasternum large, side pieces narrow, epimera distinct.

Elytra convex, covering the abdomen; wings sometimes wanting.

Abdomen with six free ventral segments.

Anterior coxæ conical, prominent, contiguous; middle coxæ conical, slightly prominent, somewhat distant; posterior coxæ small, conical, widely separated (prominent and approximated in Brathinus).

Legs moderate, thighs usually clavate, tarsi 5-jointed, claws simple.

These are small, shining, usually ovate, sometimes slender insects, of a brown color, more or less clothed with erect hairs. They are found variously, near water, under stones, in ants' nests, and under bark, and are frequently seen flying in the twilight.

The general form is that of Pselaphidæ, from which they differ by the long elytra and the conical distant posterior coxæ.

Our genera are :—

Last joint of maxillary palpi longer than the preceding. Posterior coxæ prominent internally.	5.
Last joint of maxillary palpi narrow, subulate.	2.
Last joint of maxillary palpi obtusely pointed, indistinct.	3.
2. Antennæ at the anterior margin of front, approximate.	**Chevrolatia.**
Antennæ under the sides of front near the eyes.	**Scydmænus.**
3. Antennæ straight.	4.
Antennæ geniculate, first joint equal to the two following.	**Eumicrus.**
4. Pygidium covered.	
Prothorax oval.	**Cholerus.**
Prothorax transverse, wider than the elytra.	**Cephennium.**
Pygidium exposed.	
Prothorax quadrate, elytra truncate at tip.	**Euthia.**
5. Antennæ somewhat distant from the eyes, arising under a slight frontal margin.	
Elytra subtruncate.	**Brathinus.**

Microstemma Lec. is the same as Eumicrus Lap.; *Eumicrus* Lec. is Cholerus Thomson. These two genera with Cephennium and Brathinus are represented in the Atlantic region only. The other three genera occur on both sides of the continent.

FAM. XII.—**PSELAPHIDAE.**

Mentum small, corneous, more or less quadrate; ligula very small, membranous, with large diverging paraglossæ; labial palpi very small.

Maxillæ with membranous ciliated lobes, the outer much larger than the inner; palpi usually very long, and 4-jointed.

Mandibles usually broad and short, with the tip curved and acute.

Antennæ 11-jointed (rarely 10-jointed) in the second sub-family; 1- to 6-jointed in the first, usually clavate, rarely moniliform.

Eyes composed of large lenses, sometimes wanting.

Prothorax with the side pieces not distinct; prosternum almost obsolete between the coxæ, coxal cavities open behind.

Mesosternum short, obsolete between the coxæ.

Metasternum large, side pieces simple.

Elytra truncate, short, leaving the abdomen exposed; wings, when present, folded beneath the elytra.

Abdomen with five or six free but not flexible ventral segments; dorsal segments entirely corneous, free in the second sub-family, the anterior ones connate in the first.

Anterior coxæ conical, prominent, contiguous; middle coxæ rounded, contiguous; posterior coxæ narrow, transverse, usually not contiguous.

Legs long; femora stout; tibiæ usually slender, and without spurs; tarsi short, 3-jointed, the first joint very short, the second long, except in Clavigeridæ and in Faronus; claws simple, sometimes equal, sometimes unequal, and frequently single.

The species of this family are very small, not exceeding one-eighth of an inch, and of a chestnut-brown color, usually slightly pubescent; the head and thorax are most frequently narrower than the elytra and abdomen, which is convex, and usually obtuse at tip. Many are found flying in twilight; their habits at other times are various, some being found in ants' nests, while others occur under stones and bark.

This family approaches closely the Staphylinidæ, but the ventral segments are fewer in number, and not freely moving, and the eyes are composed of large lenses.

According to the structure of the antennæ and abdomen, they may be divided into two sub-families, which are regarded as tribes by Lacordaire, groups by Duval, and as families by the German authorities.

Antennæ with less than six joints.	CLAVIGERINÆ.
Antennæ 11-jointed, rarely 10-jointed.	PSELAPHINÆ.

Sub-Family I.—CLAVIGERINAE.

This sub-family is represented in our fauna, thus far, by two genera, found in ants' nests: both have but two-jointed antennæ, and the outer joint is indistinctly annulated in Fustiger.

Eyes wanting.	**Adranes.**
Eyes present.	**Fustiger.**

The genera of this sub-family have the head narrow, and the palpi rudimentary, of but one joint; the three anterior dorsal segments are connate, and deeply excavated, forming a large cavity, at the sides of which, and at the external apical angle of the elytra, are tufts of hair. The ants which support these insects, by caressing these tufts of hair with their antennæ cause the exudation of a fluid, which they greedily swallow. The first and second joints of the tarsi are very short; the third is long, with a single claw.

Sub-Family II.—PSELAPHINAE.

In these the abdominal segments are all separate, and the antennæ have eleven distinct joints, except in certain species of Bryaxis, where but ten joints exist; they are usually gradually clavate, but in Ceophyllus are composed of equal globular joints.

Two tribes are indicated, as follows:—

Posterior coxæ transverse, not prominent, not contiguous.	PSELAPHINI.
Posterior coxæ conical, prominent, contiguous.	EUPLECTINI.

Tribe I.—**PSELAPHINI.**

These species are always narrowed in front, and have the characteristic form of this family, while those of the next tribe are slender, linear, and frequently depressed, so as to resemble Staphylinidæ, of the tribe Oxytelini. The form of the hind coxæ at once distinguishes them from the next tribe. The second joint of the tarsi is always long.

According to the insertion of the antennæ, this tribe is divided into two groups:—

Antennæ inserted on two approximate tubercles.	PSELAPHI.
Antennæ distant, inserted at the side of the head.	BRYAXES.

Group I.—**Pselaphi.**

In this group the antennæ are approximate, and inserted under a large frontal elevation, which is channelled. The abdomen is strongly margined.

- Tarsi with ungues two, equal;
  - Antennæ moniliform;
    - Maxillary palpi very small. **Atinus.**
    - Maxillary palpi with the last two joints very transverse and lamelliform. **Ceophyllus.**
  - Antennæ clavate; last joints gradually larger;
    - Maxillary palpi with the third joint transverse, triangular; the fourth larger, convex. **Cedius.**
    - Maxillary palpi with lateral setiform appendages;
      - Last joint lunate; abdomen carinate. **Tmesiphorus.**
      - Last joint transverse, similar to the penultimate. **Ctenistes.**
    - Maxillary palpi with the last joint oval, with a small terminal seta. **Tyrus.**
  - Antennæ with the last joint large, rounded;
    - Maxillary palpi with the third joint very small; the fourth long, cylindrical. **Cercocerus.**
- Tarsi with a single unguis; maxillary palpi excessively long;
  - Maxillary palpi with the last joint club-shaped. **Pselaphus.**
  - Maxillary palpi with the last joint hatchet-shaped:
    - Frontal protuberance narrow, antennæ straight. **Tychus.**
    - Frontal protuberance broader, antennæ subgeniculate, 1st joint elongate, 2d globose. **Bythinus.**

The anterior trochanters and thighs are armed with acute spines in Ceophyllus and Cedius. *Hamotus* was founded by Aubé on a species (*H. humeralis*) which cannot be considered as properly separated from Tyrus; it is widely distributed, and occurs in the Atlantic and Pacific regions. The genera are all represented in the Atlantic States; thus far only Ctenistes, Tyrus, and Tychus have been found in California.

Group II.—**Bryaxes.**

The antennæ are distant at base, and inserted at the sides of the head. The palpi have not the extraordinary development seen in the previous group, and the last joint is oval or fusiform.

Antennæ 11-jointed. 2.
Antennæ 10-jointed. **Decarthron.**
2. Abdomen margined; tarsi with a single claw. 3.
Abdomen not margined; tarsi with two unequal claws. **Batrisus.**
3. Antennæ with the last three joints larger. 4.
Antennæ with only the last joint large. 6.
4. Elytra with a dorsal stria. 5.
Elytra without striæ, prothorax not foveate. **Pselaptus.**
5. Elytra with dorsal stria; abdomen broadly margined. **Bryaxis.**
Elytra without dorsal stria; abdomen finely margined. **Scalenarthrus.**
6. Antennæ long, body pubescent. **Eutrichites.**
Antennæ very short; body glabrous. **Eupsenius.**

With Batrisus we have combined *Arthmius* Lec., described as having but a single unguis; renewed examination, with a powerful microscope, has shown that there is a second very small unguis present. The antennæ are frequently very different in form in the sexes of the same species of Bryaxis and Batrisus; these two genera are also represented in the Pacific district. Scalenarthrus occurs in Arizona.

Tribe II.—EUPLECTINI.

The insects of this tribe have a more depressed and linear form than is seen in the preceding tribe, and approach thus to the next family. The antennæ are always distant, and the abdomen strongly margined. The posterior coxæ are conical, prominent, and contiguous. The abdomen has six distinct ventral segments.

Tarsi with two unequal claws. 2.
Tarsi with a single claw. 3.
Tarsi with two equal claws. **Faronus.**
2. Antennæ straight, 1st joint not elongated. **Trichonyx.**
Antennæ geniculate, 1st joint long. **Rhexius.**
3. Front not prolonged; antennæ quite straight. 4.
Front narrow prolonged; antennæ feebly geniculate. **Rhinoscepsis.**
4. Last three joints of antennæ gradually wider; 2d ventral segment not longer than 3d; body depressed. 5
Last joint of antennæ very large; 2d ventral segment elongated; body more convex. **Trimium.**
5. Eyes distinct. **Euplectus.**
Eyes wanting. **Eutyphlus.**

Faronus is represented by *F. Tolulæ* in the southern Atlantic States, by *F. Isabellæ* in California, and by *F. parviceps* (*Euplectus parviceps* Mäklin) in Alaska. Trimium has been found in Alaska, and Trichonyx only in Vancouver Island. The other genera are not represented near the Pacific coast.

FAM. XIII.—**STAPHYLINIDAE.**

Mentum quadrate, usually trapezoidal, the anterior part separate; ligula rarely corneous, usually membranous or coriaceous; paraglossæ usually distinct; labial palpi usually 3-jointed, rarely (in certain Aleocharini) with four, two, or even one joint.

Maxillæ with two lobes, usually ciliate; palpi 4-jointed, except in Aleochara, where there are five joints.

Antennæ variable in insertion and form, 11-jointed, rarely 10-jointed.

Eyes usually finely granulated.

Prothorax with the side pieces not separate, prosternum variable in form, coxal cavities usually open behind.

Mesosternum short, side pieces large, epimera distinct.

Metasternum moderately large, side pieces narrow, epimera distinct.

Elytra truncate, leaving a great part of the abdomen exposed, except in certain Omalini; wings, when present, folded under the elytra.

Abdomen with seven or eight visible segments, freely movable, and entirely corneous both above and beneath.

Legs variable in length and form; anterior coxæ usually large, conical, prominent, and contiguous, rarely (Piestidæ) rounded, not prominent, or (Micropeplidæ) transverse, not prominent; middle coxæ conical, oblique, not prominent, sometimes contiguous, sometimes distant; hind coxæ variable in form, contiguous, except in Micropeplidæ, where they are small, rounded, and distant.

Tarsi usually 5-jointed, rarely 4-jointed, and in Micropeplidæ and certain Oxytelini 3-jointed; in many genera of Aleocharini the front, or the front and middle tarsi, are 4-jointed, while the hind tarsi have five joints.

This family embraces a very large number of species, mostly of small size, and in many parts of the body shows a very great range of variation. Genera with short elytra occur in several families of Coleoptera, but in no other are they associated with an entirely corneous abdomen having seven or eight visible segments.

We have followed Mr. Fauvel in his primary division of the family into two sub-families, and the arrangement of the tribes, adopted by him, is here introduced, with but little alteration, except in the order in which they are placed; which is precisely that of Duval, by whom the table was originally devised.

Antennæ 10- or 11-jointed, not abruptly capitate, and not received in cavities. Staphylininæ.
Antennæ 9-jointed, with abrupt club, received in cavities on the under surface of the prothorax. Micropeplinæ.

Sub-Family I.—STAPHYLININAE.

This sub-family contains a large number of tribes, which may be tabulated as follows:—

Antennæ inserted upon the front. 2.
Antennæ inserted at the anterior margin of the head; 3.
Antennæ inserted under the sides of the front; 4.
2. Prothoracic spiracles visible, front coxæ large; antennæ not suddenly clavate; 4th joint of max. palpi distinct. I. Aleocharini.
Prothoracic spiracles not visible, front coxæ small; antennæ slender, distinctly clavate; 4th joint of max. palpi obsolete. III. Stenini.
3. Antennæ filiform or gradually thickened, 4th joint of max-palpi distinct. II. Staphylinini.
4. Front coxæ conical, prominent; 5.
Front coxæ transverse. IX. Protinini.
Front coxæ globose. X. Piestini.
5. No ocelli. 6.
Ocelli two, situated at or behind the vertex. VIII. Homalini.
6. Hind coxæ transverse; 7.
Hind coxæ conical. IV. Pæderini.
7. 7th abdominal segment retractile. 8.
7th abdominal segment exposed. VII. Oxytelini.
8. Prothoracic spiracles visible; epipleuræ well defined. V. Tachyporini.
Prothoracic spiracles concealed; epipleuræ ill-defined. VI. Phlœocharini.

Tribe I.—ALEOCHARINI.

The prothoracic stigmata in this tribe are not covered by the inflexed portion of the pronotum; but, without reference to this character, the insertion of the antennæ upon the front will distinguish the genera from those of all other tribes except the first

Stenini, and these will be readily known by the small anterior coxæ.

Groups are indicated by the following characters:—

Internal lobe of the maxillæ membranous internally, and ciliate;
Eyes not prominent; third joint of maxillary palpi moderately elongated. ALEOCHARÆ.
Eyes prominent; third joint of max-palpi thickened. GYROPHÆNÆ.
Internal lobe of the maxillæ elongated, entirely corneous, hooked at the tip, and serrate internally. GYMNUSÆ.

Group I.—**Aleocharæ.**

In this group the interior lobe of the maxillæ has the internal margin membranous and ciliate; the maxillary palpi are moderate in length, with the second and third joints moderately elongated, the fourth small, subulate, distinct, and in Aleochara with an additional very small fifth joint. The eyes are never very convex.

The genera of this group are very numerous, and frequently cannot be distinguished without the most close examination, or even dissection; it is consequently impossible, within the limits of a work like the present, to give such characters as will enable the student to recognize them with certainty. Those who are sufficiently advanced to study this group must, therefore, refer to the works of Erichson, Duval, Kraatz, Rey, and Fauvel for full information.

The following genera (besides several not yet recognized, or described) are known to us as occurring in our fauna:

Antennæ 11-jointed. 2.
Antennæ 10-jointed. D.
2. Tarsal joints 4 : 5 : 5 ; (labial palpi 3-jointed). A.
Tarsal joints 5 : 5 : 5. B.
Tarsal joints 4 : 4 : 5. C.

A.

Head constricted behind into a narrow neck. 2.
Head feebly narrowed behind. 3.
2. First joint of hind tarsi elongated. **Falagria.**
First joint of hind tarsi very little longer than 2d. **Echidnoglossa.**
3. Joints of hind tarsi equal or slightly diminishing in length. 4.
First joint of hind tarsi conspicuously longer than 2d. 5.
4. Ligula long, slender, bifid; hind tarsi with joints 1–4 equal. **Hoplandria.**
Ligula short, bifid; hind tarsi with joints 1–4 slightly decreasing. **Homalota.**

5. First three dorsal segments normal. 6.
First three dorsal segments with lateral tufts of hairs. **Lomechusa.**
6. First joint of hind tarsi very long. 7.
First joint of hind tarsi less elongated; 3d joint of maxillary palpi strongly inflated. **Callicerus.**
7. Middle coxæ subcontiguous; antennæ long and slender. **Tachyusa.**
Middle coxæ distant; antennæ stouter. **Myrmedonia.**

B.

Head prominent, narrowed at base. 2.
Head retracted, not narrowed at base. 5.
2. First joint of hind tarsi longer than 2–3 united. 3.
First joint of hind tarsi shorter than 2–3 united. **Phlœopora.**
3. Mesosternum not carinate; 4
Mesosternum carinate; ligula short. **Ilyobates.**
4. Ligula short. **Calodera.**
Ligula long. **Ocalea.**
5. Palpi normal; maxillary 4-jointed, labial 3-jointed. 6.
Palpi with accessory terminal joint; **Aleochara.**
6. Ligula entire. 7.
Ligula bifid. 8.
7. Body very broad and flat; maxillary palpi with 3d joint elongate. **Homœusa.**
Body narrow. **Haploglossa.**
8. Mandibles entire at tip; dorsal segments 1–3 transversely impressed. 9.
Mandibles cleft at tip. **Dasyglossa.**
9. Labial palpi with joints gradually narrower. 10.
Labial palpi with joints 1–2 thick; maxillary palpi with 3d joint not inflated. **Thiasophila.**
10. Maxillary lobe normal in form. ***Oxypoda.**
Maxillary lobe with several processes at tip. **Polylobus.**

C.

Head strongly constricted behind into a narrow neck. 2
Head not strongly constricted behind. 3.
2. Labial palpi 3-jointed. **Autalia.**
Labial palpi 2-jointed. **Eudera**
3. Front and middle tibiæ pubescent. 4.
Front and middle tibiæ with spines on outer margin. **Phytosus.**
4. Labial palpi 2-jointed. 5.
Labial palpi 3-jointed. 7.

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* The genera Euthorax and Myrmecochara, which also enter into our fauna, are not sufficiently distinct to find a place in the table; and in fact we have great doubt that they should be continued as distinct.

5.	Labial palpi normal; ligula entire.	6.
	Labial palpi very long; joints of hind tarsi 1–4 equal.	**Stenusa.**
6.	Joints of hind tarsi 1–4 subequal.	**Silusa.**
	First joint of hind tarsi equal to 2–3 united.	**Placusa.**
7.	Ligula entire; mesosternum not carinate.	8.
	Ligula bifid; mesosternum carinate.	**Bolitochara.**
8.	Thorax wider than the elytra, not narrowed in front.	**Euryusa.**
	Thorax as wide as the elytra, narrowed in front.	**Philotermes.**
	Thorax narrower than the elytra, narrowed at base.	**Leptusa.**

D.

All the tarsi 4-jointed.	**Oligota.**

There are also in our collections several species which represent new or unrecognized genera, which we are unwilling to define at present. In fact the greater part of the foregoing table, so far as it is an expansion of the one contained in the 1st edition of this work, is a compilation, which may give some assistance to the students of our fauna until a complete study of the group has been made. In face of more important work, time is now wanting to us for such a tedious and complex investigation. Some of the genera (*e. g.*, Myrmedonia) have a lateral suture on the under side of the head, as observed by Fauvel, similar to that described by Dr. Horn in Quedius, and noticed by Dr. LeConte in Cicindelidæ. It will be of great service in the future study of our genera.

The descriptions in the books are quite discordant in many instances. Thus the whole of the division having the tarsi with 4 : 4 : 5 joints was established by Mulsant and Rey, and correctly adopted by Fauvel; but by Erichson, Kraatz, and Duval, these genera were placed in the division 4 : 5 : 5. Still more confusing are the descriptions of Ischnoglossa. This genus is described by Kraatz as having the tarsi 5 : 5 : 5, and by Duval is considered as not distinct from Oxypoda, while Mulsant and Ray place it as a sub-genus of Stichoglossa. Atimeles, not being sufficiently distinct from Lomechusa, has been suppressed.

Group II.—**Gyrophænæ.**

The species of this group are small, of an oval form, much broader than those of the previous group, and are easily distinguished by the prominent eyes, and by the third joint of the maxillary palpi being thickened. They live exclusively in fungi, and are gregarious; they are remarkable for the smooth shining surface, almost destitute of hairs or punctures. The anterior and middle tarsi are 4-jointed, and posterior ones 5-jointed; the first joint of the hind tarsi is elongated; the thorax is distinctly margined. The labial palpi have but two joints. The middle coxæ are widely separated.

It is prudent for the present to refer all of our species to Gyrophæna. *G. geniculata* Mæklin, which has been placed in Agaricocharia, is probably a species of Eudera.

Group III.—**Gymnusæ.**

In this group the lobes of the maxillæ are long and slender, the inner one is entirely corneous, serrate internally, and hooked at the apex. The maxillary palpi have the second and third joints very long, and the fourth not very distinct. The head is deflexed, pointed in front; the antennæ slender; the thorax and elytra broad, and the abdomen strongly but gradually narrowed behind, so that a form is assumed approaching that of some members of Tachyporini.

Tarsi 5-jointed; labial palpi long, 3-jointed.	**Gymnusa.**
Labial palpi setaceous, with two indistinct joints; anterior tarsi 4-jointed, posterior ones 5-jointed; ligula short, entire.	**Myllæna.**
Labial palpi large, 3-jointed, last joint very small; tarsi 3-jointed; ligula large, bifid; lobes nearly as long as the palpi.	**Dinopsis.**

Thus far species have occurred only in the Atlantic States; they are found in very wet places. Two species of Gymnusa occur in the Canadian and Lake Superior regions, both identical with the European species.

Tribe II.—STAPHYLININI.

In this tribe the spiracles of the prothorax are visible, but the antennæ are situated at the anterior margin of the front, and differ in position in the three sub-tribes. The anterior coxæ are large and conical; the trochanters of the hind legs are prominent; the abdomen is strongly margined.

Lateral margin of the thorax simple.	QUEDIINI.
Lateral margin of the thorax double;	
Antennæ distant.	STAPHYLININI.
Antennæ approximated.	XANTHOLININI.

Sub-Tribe 1.—**Quediini.**

The antennæ are inserted at the anterior point of the lateral margin of the front; the thorax is smooth and glabrous, with but few dorsal punctures, and its lateral margin is single and acute, as usual.

The body is usually fusiform, sometimes linear. The species are found in various situations; Quedius under stones and bark in damp forests, Acylophorus near water. The labrum is usually margined with membrane, and usually, though not always, bilobed. There is a distinct lateral suture on the under side of the head beneath the eyes.

This sub-tribe is very closely related to the preceding tribe, but the difference in the position of the antennæ will enable the student to avoid confounding them together.

The tarsi are 5-jointed, the middle coxæ contiguous, the hind tarsi not dilated, and the maxillary palpi not dilated, in all of our genera. Tanygnathus has 4-jointed tarsi.

Tarsi 4-jointed.	**Tanygnathus.**
Tarsi 5-jointed;	
Antennæ geniculate.	**Acylophorus**
Antennæ straight;	
Palpi subulate.	**Heterothops.**
Palpi filiform.	**Quedius.**

Sub-Tribe 2.—**Staphylinini** (genuini).

The antennæ are inserted on the anterior margin of the front, inside of the base of the mandibles, but distant from each other. The thorax is more or less convex, frequently densely punctured, with the lateral margin double; the prothoracic spiracles are always visible and uncovered; the labrum is always bilobed; the antennæ are never geniculate. The suture is imbricate only in Thinopinus.

The species live on decomposing animal and vegetable substances, or on excrements; rarely (Thinopinus) on the shores of the ocean, below high-water mark. Some of them are the largest of the family.

The genus Staphylinus, as set forth by Erichson, has been dismembered by later authors, to form several of the genera below mentioned.

A.	Maxillary palpi with the fourth joint shorter than the third;	
	Thorax smooth, narrowed at the base;	2.
	Thorax punctured, pubescent, narrowed at the base.	**Listotrophus.**
2.	Middle coxæ contiguous, suture imbricated, wings none.	**Thinopinus.**
	Middle coxæ distant, suture straight.	**Creophilus.**
B.	Maxillary palpi with the fourth joint equal to or longer than the third;	
	Marginal lines of the thorax separate, wings distinct, last joint of labial palpi truncate.	2.
	Marginal lines of the thorax separate, wings none.	**Hadrotes.**
	Marginal lines of the thorax united near the apex, body winged;	3.
2.	Marginal lines closely approximated in front, the inner indistinct anteriorly.	**Trigonophorus.**
	Marginal lines distant in front, the inner well defined.	**Xanthopygus.**
3.	Ligula emarginate;	4.
	Ligula entire;	5.
4.	Middle coxæ slightly separate; abdomen narrowed at tip (thorax punctured, pubescent).	***Staphylinus.**
	Middle coxæ contiguous; abdomen very long, parallel.	**Ocypus.**
5.	Femora unarmed.	6.
	Femora spinous beneath.	**Belonuchus.**
6.	Last joint of labial palpi securiform.	**Euryporus.**
	Labial palpi slender.	**Philonthus.**

Sub-Tribe 3.—**Xantholinini.**

The antennæ are inserted near the middle of the anterior margin of the front, and approximated; they are geniculate in our genera; the thorax is long and rectangular, with rows of punctures, of which the outer ones are curved; the lateral margin is double, and the prothoracic spiracles are uncovered. The head is usually equal in size to the thorax, and is narrowed behind into a small neck. The suture of the elytra is imbricated in our genera when the antennæ are strongly geniculate.

The species are found under moss in woods, under stones, and bark.

	Antennæ strongly geniculate; suture imbricated; middle coxæ distant.	2.
	Antennæ feebly geniculate; suture entire.	5.
2.	Maxillary palpi with last joint subulate.	3.
	Maxillary palpi with last joint longer.	**Xantholinus.**
3.	Front tarsi not dilated.	4.
	Front tarsi broadly dilated.	**Leptolinus.**

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* The acetabula are always separated by the mesosternum, which is, however, frequently exceedingly narrow; they are confluent in Ocypus.

4. Middle coxæ distant.	**Leptacinus.**
Middle coxæ contiguous.	**Metaponcus.**
5. Thorax oblong, elytra with the sutural stria obsolete.	**Othius.**
Thorax oblong, elytra with a deep sutural stria.	**Baptolinus.**
Thorax narrowed in front, elytra with a deep sutural stria.	**Diochus.**

Tribe III.—**STENINI.**

In this tribe the prothoracic spiracles are concealed by the inflexed portion of the pronotum; the anterior coxæ are small, conical, and prominent, and the posterior ones are conical and prominent. The antennæ are inserted upon the front, straight, 11-jointed with the last three joints larger than the preceding; the trochanters are simple. The second ventral segment is marked with two short ridges. The first joint of the maxillary palpi is nearly as long as the second, and the 4th is obsolete. The eyes are very large and prominent in this tribe, so that the head resembles that of Cicindela. The labrum is entire, and rounded anteriorly. The tarsi have five distinct joints.

Two genera, both represented in our fauna, are known:—

Paraglossæ connate, indistinct.	**Dianous.**
Paraglossæ dilated, rounded.	**Stenus.**

The species of this tribe are found running on mud near water; those of Stenus are numerous, and, according as the abdomen is margined or not, and the fourth tarsal joint simple or bilobed, may be arranged in natural groups; the genus is represented on both sides of the continent. Of Dianous but two species are known; one is European, and occurs also at Lake Superior, the other is found from New Hampshire to British Columbia.

The ligula is attached by a loose membrane in Stenus, and after death is frequently protruded to a distance equal to half the length of the body. Euæsthetus and Megalops have been associated in this tribe, but in our opinion improperly; the former will in this work be found in Pæderini, the latter in Oxytelini, where it was first placed by Erichson.

Tribe IV.—**PÆDERINI.**

In this tribe the prothoracic spiracles are invisible, being covered by the sides of the pronotum; the space behind the coxæ is corneous in some, membranous in others; the anterior coxæ are large, conical, and prominent; the posterior coxæ also conical and prominent; the antennæ are inserted under the sides of the front; the mandibles are long and slender; the palpi with the last joint usually minute. The abdomen is margined in all of our genera, except *Stictocranius* and *Palaminus*. The hind trochanters project inwards but slightly. The head is always narrowed suddenly behind, forming a distinct neck.

Three groups seem to be indicated:—

Tarsi 4-jointed.	EUÆSTHETI.
Tarsi 5-jointed.	
Palpi with the last joint very small, subulate.	PÆDERI.
Palpi with the last joint equal to the preceding.	PINOPHILI.

Group I.—**Euæstheti.**

The eyes are moderate in size, and but slightly prominent; the antennæ are inserted before the eyes, at the base of the labrum, which is denticulate anteriorly. The tarsi are 4-jointed.

Body smooth.	2.
Body punctured.	**Euæsthetus.**
2. Abdomen margined.	**Edaphus.**
Abdomen not margined.	**Stictocranius.**

The species, thus far, are found only in the Atlantic district. Edaphus possesses but one species, *E. nitidus*, from Louisiana; it is remarkable for simulating in appearance a Pselaphide of the tribe Euplectini. The head is marked with two deep foveæ, and at the base of the thorax are three others. The upper surface is smooth, and the elytra are slightly pubescent; the color is uniform, yellowish-red. Stictocranius occurs in ants' nests at Washington, D. C. Euæsthetus lives on flowers.

Group II.—**Pæderi.**

The genera of this group are numerous, and are found under bark, under stones, and near water. The form of the palpi readily distinguishes them from the second group.

A. Hind tarsi with the fourth joint not lobed (prosternum behind the coxæ membranous);	
Antennæ geniculate.	**Cryptobium.**
Antennæ straight;	2.

2. Hind tarsi with the joints 1–4 nearly equal; 3.
Hind tarsi with the joints 1–4 decreasing gradually in length; 4.
3. Thorax subquadrate; labrum bilobed. **Lathrobium.**
Thorax narrowed in front; labrum 4-toothed. **Scopæus.**
4. Thorax narrowed in front; 5.
Thorax subquadrate; 6.
5. Labrum 4-toothed (last two abdominal segments elongated). **Echiaster.**
Labrum with two acute teeth. **Stilicus.**
6. Labrum with two small teeth. **Lithocharis.**
Labrum rounded, emarginate at tip. **Dacnochilus.**
Labrum entire, elytra very short. **Liparocephalus.**
B. Hind tarsi with the fourth joint lobed;
Last joint of maxillary palpi slender, very minute; 2.
Last joint of maxillary palpi obtuse. **Pæderus.**
2. Elytra longer than the thorax. **Sunius.**
Elytra shorter than the thorax. **Stilicopsis.**

Group III.—**Pinophili.**

Very elongated cylindrical species, sometimes of large size, and found under bark of trees; some species of Palaminus are also found on leaves of trees. Our genera are but two, both of wide distribution:—

Abdomen distinctly margined. **Pinophilus.**
Abdomen not margined. **Palaminus.**

Tribe V.—TACHYPORINI.

The prothoracic spiracles are visible; the anterior coxæ are large, conical, and prominent, with the trochanters very distinct. The antennæ are inserted under the lateral margin of the front.

Our genera may be separated into five groups:—

Posterior coxæ transverse.
  Antennæ 10-jointed, tarsi 4-jointed. HYPOCYPTI.
  Antennæ 11-jointed, tarsi 5-jointed.
    First joint of hind tarsi nearly as long as the tibia. Posterior coxæ apparently connate with the metasternum. TRICHOPSENII.
    First joint of hind tarsi moderate or short. Posterior coxæ free.
      Head not margined. TACHYPORI.
      Head margined. BOLITOBII.
Posterior coxæ triangular, prominent.
  Antennæ 11-jointed, tarsi 5-jointed; head not margined. HABROCERI.

Group I.—**Hypocypti.**

This group contains two genera, the species are very small, broadly oval and pubescent.

Middle coxæ distant, mesosternum flat or slightly concave. **Hypocyptus.**
Middle coxæ narrowly separated, mesosternum carinate. **Microcyptus.**

Hypocyptus is represented on both sides of the continent, Microcyptus (*Anacyptus*‖Horn) contains one species from Georgia and Arizona.

Group II.—**Trichopsenii.**

Two very anomalous genera form this group, both of which occur in the Southern States, in the nests of Termes.

Body broad, narrowed behind; pronotum narrowed in front, not impressed; hairs long, but sparse and bristly. **Trichopsenius.**
Body narrower; pronotum not narrowed in front, with an apical impression, the bottom of which is membranous. **Xenistusa.**

Group III.—**Tachypori.**

The genera of this group are as follows:—

Abdomen margined; tibiæ fimbriate at tip with unequal spinules. 2.
Abdomen not margined; tibiæ fimbriate at tip with equal spinules. 7.
2. Mesosternum not carinate. 3.
Mesosternum carinate; maxillary palpi filiform. 4.
3. Maxillary palpi filiform. **Tachinus.**
Maxillary palpi subulate. **Tachyporus.**
4. Epipleuræ horizontal; elytra not prolonged. 5.
Epipleuræ vertical; elytra longer than the body. 6.
5. Mesosternum feebly carinate; anterior tarsi ♂ simple. **Cilea.**
Mesosternum strongly carinate; anterior tarsi ♂ dilated. **Physetoporus.**
6. Mesosternum strongly carinate; anterior tarsi ♂ simple. **Erchomus.**
Maxillary palpi subulate; body finely pubescent. **Conosoma.**

Cilea occurs in the Atlantic region, Physetoporus in Arizona, each represented by one species. The other genera occur on both sides of the continent, and the species are numerous.

Group IV.—**Bolitobii.**

Three genera constitute this group; the species are glabrous and often prettily colored. The lateral suture on the under side of the head is distinct.

Maxillary palpi filiform.	**Bolitobius.**
Maxillary palpi with the last joint conical, acute	**Bryoporus.**
Maxillary palpi subacute.	**Mycetoporus.**

In Bolitobius the head is often elongate, the tibiæ fimbriate at tip with unequal spinules, Bryoporus has the spinules short and equal, while in Mycetoporus the species vary between the two forms. These genera are represented on both sides of the continent.

Group V.—**Habroceri.**

This group contains in our fauna but one genus, easily known in the tribe by its capillary antennæ, and the form of the posterior coxæ.

Habrocerus occurs in the Atlantic region, and contains two species.

Tribe VI.—**PHLŒOCHARINI.**

This tribe consists also of a very small number of species, of slender, depressed form.

The prothoracic spiracles are covered; the thorax behind the anterior coxæ is membranous; the latter are conical and prominent, and the hind coxæ are transverse; the hind trochanters are on the internal margin of the thighs; the tarsi are 5-jointed.

The antennæ are inserted under the sides of the front, straight, 11-jointed, scarcely thickened externally. The second ventral segment is longitudinally elevated at the middle.

It will thus be seen that this tribe differs from Homalini by the absence of ocelli, and from Tachyporini only by the prothoracic spiracles being covered.

Prothorax not costate; max. palpi filiform; mandibles simple.	**Olisthærus.**
Prothorax costate; max. palpi subulate; mandibles toothed.	**Pseudopsis.**

Of Olisthærus there are but two species found in northern Europe and Canada. Pseudopsis is represented by one species, abundant in Canada, very rare in Europe, and by another species in Arizona.

Tribe VII.—**OXYTELINI.**

The prothoracic stigmata are covered by the inflexed portion of the pronotum; the anterior coxæ are large, conical and prominent; the second ventral segment is without any ridges. The antennæ are more or less geniculated, 11-jointed, and are inserted under the lateral margin of the front; the first joint of the maxillary palpi is short.

We would arrange our genera in four groups, as follows:—

Middle coxæ at the sides of the breast.	OXYPORI.
Middle coxæ contiguous, or nearly so;	
Abdomen not margined.	OSORII.
Abdomen margined.	
Antennæ 11-jointed.	OXYTELI.
Antennæ 10-jointed, eyes very large.	MEGALOPES.

Group I.—**Megalopes.**

This group contains but a single genus, Megalops, having the eyes larger than in Stenus, and the thorax coarsely, irregularly punctured, and marked with a few lateral transverse furrows. The antennæ are inserted under the lateral margin of the front, and have but ten joints; the tarsi are 5-jointed.

Two species are known to us from the Atlantic district; they are found under the bark of trees, and are very rare.

Group II.—**Oxypori.**

But a single genus is known, Oxyporus, found in fungi. The head is very large, with the eyes small, not prominent, the mandibles long and decussating, not dentate; the mentum is armed with a medial bifid tooth; the last joint of the labial palpi is lunate; the middle coxæ are very widely separated, and the tarsi are 5-jointed. The abdomen is strongly margined.

Group III.—**Osorii.**

The body is cylindrical, the middle coxæ are contiguous, the tarsi are 5-jointed, and the abdomen is not at all margined. The ligula is corneous. The mandibles are stout, but not toothed.

The genus Osorius is distinguished from Holotrochus by the front tibiæ being armed with spines. Both occur in the Atlantic region.

Group IV.—**Oxyteli.**

The body is either cylindrical or depressed, and the abdomen is strongly margined; the middle coxæ are contiguous, or nearly so;

in some genera the tarsi are 5-jointed, in others 3-jointed. The species are found partly in wet places, partly (Platystethus and certain Oxytelus) in dung and other decomposing material.

The genera may be distinguished as follows:—

	Tarsi 3-jointed.	2.
	Tarsi 5-jointed.	9.
2.	Tibiæ more or less spinous on outer margin.	3.
	Tibiæ pubescent.	6.
3.	Tibiæ with a single row of spines (body depressed).	4.
	Front tibiæ with two rows of spines; antennæ strongly geniculate; (body cylindrical).	**Bledius.**
4.	Front tibiæ alone with a single row of spines.	5.
	Front and middle tibiæ with a single row of spines.	**Platystethus.**
5.	Middle coxæ separated.	**Oxytelus.**
	Middle coxæ contiguous.	**Haploderus.**
6.	Scutel visible.	7.
	Scutel invisible.	**Trogophlœus.**
7.	Head not constricted behind; body pubescent.	8.
	Head strongly constricted behind; body glabrous.	**Apocellus.**
8.	Maxillary palpi with last joint conical, acute.	**Ancyrophorus.**
	Maxillary palpi with last joint subulate; sutural angle of elytra truncate, exposing slightly the wings.	**Thinobius.**
9.	Antennæ subfiliform.	10.
	Antennæ with last three joints abruptly wider.	**Syntomium.**
	Antennæ with last five joints wider; prothorax toothed at the sides: mandibles with a long median tooth.	**Zalobius.**
10.	Middle coxæ distant.	**Coprophilus.**
	Middle coxæ contiguous.	**Deleaster.**

Distemmus Lec., formerly included in this group, is really only a species of Homalium, and identical with the European *H. lapponicum.*

Tribe VIII.—**HOMALINI.**

In this tribe the prothoracic spiracles are concealed by the inflexed portion of the pronotum; the prosternum behind the coxæ is membranous; the anterior coxæ are conical and prominent, the posterior ones transverse; the hind trochanters are on the internal margin of the thighs; the tarsi are 5-jointed; the palpi are filiform, except in a few genera, where they are subulate; the head is furnished behind with two simple lenses or ocelli, which are usually placed on a line joining the posterior margins of the eyes. The antennæ are inserted under the lateral margins of the front. The second ventral segment is carinate at the base.

The genera are numerous, and cannot be recognized without close observation; the following table will, we hope, be sufficient for ordinary studies:—

	Maxillary palpi with the last joint not subulate.	2.
	Maxillary palpi with the last joint smaller and narrower, subulate.	16.
2.	Hind tarsi with joints 1–4 unequal.	3.
	Hind tarsi with joints 1–4 very short, equal.	14.
3.	Hind tarsi with the 1st joint elongated.	4.
	Hind tarsi with joints 1–2 equally elongated.	9.
4.	Maxillary palpi with 4th joint longer than the 3d.	5.
	Maxillary palpi with 4th joint conical, equal to the 3d.	**Porrhodites.**
	Maxillary palpi with 4th joint broader, pyriform.	**Geodromicus.**
5.	Maxillary palpi wide, short, 4th joint stout; tibiæ spinous.	6.
	Maxillary palpi long, slender, 4th joint less than twice as long as 3d.	**Tilea.**
	Maxillary palpi with 4th joint four times longer than 3d.	**Lesteva.**
6.	Antennæ subfiliform, gradually slightly thickened.	7.
	Antennæ with joints 5–11 suddenly thicker.	8.
7.	Hind tarsi with 1st joint only elongated.	
	Mandibles short, mutic.	**Acidota.**
	Mandibles short, the right dentate at middle.	**Arpedium.**
	Hind tarsi with 1st joint very long, 2d elongated, but shorter.	**Amphichroum.**
8.	Front prolonged into a beak as long as the head.	**Tanyrhinus.**
	Front but slightly prolonged.	**Trigonodemus.**
9.	Front coxæ large, conical, prominent.	10.
	Front coxæ small, transverse, not prominent.	12.
10.	Antennæ slender.	11.
	Antennæ thickened externally, tibiæ spinous.	**Lathrimæum.**
11.	Tibiæ spinous.	**Deliphrum.**
	Tibiæ pubescent.	**Olophrum.**
12.	Hind tarsi with 5th joint equal to the others united.	**Pyonoglypta.**
	Hind tarsi with 5th joint longer than the others united.	**Acrulia.**
14.	Elytra long.	15.
	Elytra very short.	**Micralymma.**
15.	Tibiæ finely spinous.	**Homalium.**
	Tibiæ pubescent.	**Anthobium.**
16.	Maxillary palpi with 4th joint longer, slender.	17.
	Maxillary palpi with last joint very small.	18.
17.	Hind tarsi with 1st joint twice as long as 2d.	**Orobanus.**
	Hind tarsi very short, 1st joint not longer than 2d.	**Micrœdus.**
18.	Maxillary palpi with 3d joint long, obconical; antennæ slightly and gradually thickened; hind tarsi with 1st joint a little longer than the 2d.	**Ephelis.**
	Maxillary palpi with 3d joint thick, oval; antennæ shorter and much stouter; hind tarsi with joints 1–4 nearly equal.	**Eudectus.**

Tilea was established by Fauvel upon the insect found abundantly in British Columbia, which we suppose to be *Lesteva fusconigra* Maekl. Ephelis has been founded by Fauvel upon some species described as Coryphium, and we have some doubt whether they should be separated. Of Eudectus we have an undescribed species from Louisiana, collected by Mr. Sallé.

Tribe IX.—**PROTININI.**

This tribe contains a very small number of species, approaching closely to the preceding tribe, but differing by the prosternum being corneous behind the coxæ, and by the head having no ocellus in our genera, and but one in certain foreign genera. The antennæ are inserted under the sides of the front; the anterior coxæ are transverse, subconical, and somewhat prominent; the hind coxæ are transverse; the hind trochanters are at the inner margin of the thighs; the tarsi are 5-jointed. The species live in fungi and under bark.

Our two genera, without frontal ocellus, are distinguished by the form of the antennæ.

Antennæ with the joints 9–11 larger.	**Protinus.**
Antennæ with the eleventh joint only larger.	**Megarthrus.**

The latter genus is further remarkable for having the sides of the thorax frequently with an angle behind the middle; the thorax is also always channelled.

Tribe X.—**PIESTINI.**

Insects having a slender and frequently very depressed form, living under bark. The prothoracic spiracles are covered, and the whole prosternum is corneous, and in some genera separates the anterior coxæ so that the coxal cavities become entire. The antennæ are situated under the sides of the front, straight, slightly thickened externally. The second ventral segment is longitudinally elevated at the middle.

In this tribe the present family shows its strongest tendency towards the collective Clavicorn families in Cucujidæ; in the next we will find this tendency towards another member of the same series.

Two groups are indicated:—

Elytra not longer than metasternum.	PIESTI.
Elytra longer than metasternum.	TRIGONURI.

Group I.—**Piesti.**

These insects are very depressed, slender, and not narrowed behind; our species are few and of small size. The genera may be thus distinguished:—

Front coxæ contiguous.	2.
Front coxæ separated; abdomen not margined.	**Lispinus.**
2. Abdomen margined; tarsi 5-jointed.	3.
Abdomen not margined; tarsi 3-jointed.	**Glyptoma.**
3. Front tibiæ not spinose.	4.
Front tibiæ spinose.	5.
4. Abdomen widely margined.	**Triga.**
Abdomen very finely margined.	**Eleusis.**
5. Front impressed, in ♂ horned; body very depressed.	**Siagonium.**
Front not impressed; body slightly convex.	**Hypotelus.**

Lispinus and Eleusis occur on both sides of the continent; Glyptoma in the Atlantic region and in Arizona; the other two genera in the Atlantic region only.

Group II.—**Trigonuri.**

Coarsely punctured, rather depressed insects, with long, parallel, usually substriate elytra; abdomen narrowed behind the elytra.

Five species occur in the Pacific region under pine bark.

Sub-Family II.—MICROPEPLINAE.

This sub-family consists of two genera containing small subquadrate species; in one the thorax, elytra, and abdomen are ornamented with acutely elevated ribs; the antennæ are inserted under the sides of the front, 9-jointed, and terminate in a small club received into cavities on the under surface of the prothorax; the prosternum is entirely corneous. The anterior coxæ are transverse, not prominent, the hind ones distant, rounded; the tarsi are 3-jointed. The second ventral segment is broadly dilated at the middle, and separates the hind coxæ.

Body with elevated ridges.	**Micropeplus.**
Body polished, without ridges.	**Kalissus.**

This sub-family thus completes the approach of the Staphylinidæ towards the Clavicorn series in Histeridæ.

FAM. XIV.—TRICHOPTERYGIDAE.

Mentum quadrate.

Maxillæ exposed at the base, which is large, with two lobes, the inner one ciliate and hooked; palpi 4-jointed, last joint acicular.

Antennæ inserted at the margin of the front, usually 11-jointed, verticillate with long hair, the first and second joints thick, 3–7 slender, 8–11 thicker, forming a loosely articulated, elongate club.

Prothorax with the side pieces distinct.

Elytra sometimes entire, sometimes abbreviated; wings long, narrow, margined with very long hairs; sometimes wanting.

Abdomen with six or seven free ventral segments.

Anterior coxæ prominent, subglobular, contiguous; middle coxæ oval, not contiguous; posterior transverse, more or less separated, sometimes dilated over the feet into a flat plate.

Legs moderate, slender; tarsi 3-jointed, last joint with two equal simple claws.

The insects of this family are the smallest Coleoptera known.

The table of genera, which have occurred in our fauna, has been condensed from the monograph of the family by the Rev. A. Matthews (Trichopterygia illustrata et descripta, London, 1872), a work indispensable to any one who wishes to study these minute and difficult insects:—

Elytra not truncate.	PTILIINI.
Elytra truncate.	TRICHOPTERYGINI.

Tribe I.—PTILIINI.

	Prothorax widest at base.	2.
	Prothorax widest in front of the base.	3.
2.	Pygidium concealed; metasternum not extending to the sides of the body.	**Nossidium.**
	Pygidium exposed; angles of prothorax not elongated.	**Nanosella.**
3.	Prothorax fitted to the base of the elytra.	4.
	Prothorax at base extending over the humeri.	**Actidium.**
4.	Metasternum extending to the sides of the body.	6.
	Metasternum not extending to the sides of the body;	5.
5.	Prothorax not constricted at base.	**Motschulskium.**
	Prothorax narrowed at base.	**Micridium.**

5. Pygidium exposed. **Ptilium.**
Pygidium concealed. **Ptenidium.**

Tribe II.—TRICHOPTERYGINI.

Antennæ elongate, 11-jointed. 2.
Antennæ short, 9-jointed. **Limulodes.**
2. Prothorax not constricted or contracted behind; antennæ regular, joints 3–7 slender. 3.
Prothorax constricted behind. 6.
Prothorax narrowed behind, not constricted. 7.
3. Abdomen with seven ventral segments. 4.
Abdomen with six ventral segments. 5.
4. Prothorax greatly dilated, hind coxæ widely distant. ***Actinopteryx.**
Prothorax moderately dilated, hind coxæ moderately distant. **Pteryx.**
5. Hind coxæ very widely distant; mesosternum scarcely carinate; color pale. **Ptinellodes.**
Hind coxæ distant; mesosternum carinate. **Trichopteryx.**
6. Elytra long; mesosternum carinate; middle coxæ distant; hind coxæ not very distant; color dark. **Smicrus.**
Elytra short; mesosternum not carinate; middle coxæ contiguous; color pale. **Ptinella.**
7. Elytra short; hind coxæ laminate. **Nephanes.**

FAM. XV.—HYDROSCAPHIDAE.

Body very small, elongate, narrowed behind, convex; abdomen extending beyond the elytra.

Antennæ 8-jointed, gradually thicker externally, last joint long, with two slightly marked rings near the tip.

Maxillæ with but one lobe, palpi 4-jointed; 1st and 4th joints short, 2d and 3d long, the latter a little wider than the 4th.

Labial palpi short, 3-jointed, joints diminishing in length and thickness.

Hind coxæ laminate; legs short, tarsi 3-jointed, claws toothed at base.

Abdomen with six free segments: 1st and 6th each longer than the other four united, at the end with several fimbriate narrow acute processes, which serve as swimming organs.

Elytra truncate behind, wings narrow, fringed with long hairs.

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* This genus has not yet been found within our faunal limits.

This family and the genus Hydroscapha were established by Dr. Le Conte upon a very minute aquatic insect collected by Mr. Crotch in California. The characters given not having been verified by dissection were in part erroneous, and the antennæ were described as 7-jointed. The Rev. A. Matthews has since published an illustrated memoir on the genus, in which he shows that the affinities are strongly towards Trichopterygidæ, with tendencies, also, as indicated by Dr. Le Conte towards Hydrophilidæ.

Two species are known: *H. natans* from California, and *H. Crotchii* from Spain.

FAM. XVI.—**SPHÆRIIDAE.**

Body very small, rounded, convex, glabrous.

Antennæ 11-jointed, 1st and 2d thickened; last three joints forming a loose club, thinly fringed with long hairs, 3d joint longer than the five following united.

Maxillæ with but one lobe, pointed and curved at the end, and ciliate with small spines; palpi 4-jointed, last joint narrow, subulate.

Labrum prominent, as long as wide, slightly emarginate in front. Mandibles short, broad, cleft at tip, with each part of the division again cleft, inner margin with a broad coriaceous border.

Prosternum very short; meso- and metasternum connate, forming a large plate, separating the middle and hind coxæ; hind coxæ laminate triangular, protecting the posterior legs, and covering the 1st ventral segment.

Middle and hind coxæ distant, the latter laminate, covering the thighs; legs short, front thighs toothed, front tibiæ broad; tibial spurs distinct; tarsi narrow, 3-jointed.

Abdomen with but three ventral segments, the intermediate one short.

Wings fringed with long hairs.

The characters of this family have been fully set forth by Erichson (Ins. Deutschl. iii. 38).

The genus Sphærius alone represents this family, with but two species, one in Europe, the other *S. politus* in California.

They live in mud, or under stones near water, and seem to be intermediate between Hydrophilidæ and Trichopterygidæ.

The name Microsporus *Kolenati*, is preferred by Crotch, although more recent, on account of Sphærius having been previously used in botany. This change seems to us unnecessary. The relations between this family and Trichopterygidæ are so obvious as to require no farther elucidation.

Fam. XVII.—**SCAPHIDIIDAE.**

Mentum large, quadrate; ligula membranous, without paraglossæ; palpi 3-jointed.

Maxillæ exposed at the base, with two membranous lobes; palpi short, 4-jointed, with the last joint conical.

Antennæ inserted at the margin of the front, which is suddenly contracted and prolonged into a short beak, capillary, or slightly clavate, the last five or six joints wider than the preceding ones, the eighth sometimes smaller than the seventh and ninth, the first and second thicker than the third.

Prothorax with the side pieces not separate; prosternum not prolonged; coxal cavities rounded, widely open behind, completed by the mesosternum.

Mesosternum frequently prominent or carinate, side pieces usually divided by an oblique line; metasternum very large, side pieces narrow, epimera not visible.

Elytra broadly truncate behind, not covering entirely the abdomen.

Abdomen with five free ventral segments; the fifth conical, as long as the three preceding ones; sixth usually visible and when emarginate, as in certain males, permitting the seventh or even the eighth internal ones to be seen; the last three or four dorsal segments are entirely corneous.

Anterior coxæ large, cylindrical, prominent, contiguous; middle coxæ small, rounded, widely separated; posterior coxæ oval, usually widely separated.

Legs slender; tarsi 5-jointed, long, filiform; claws slender, simple.

This family contains small oval, or rounded oval, convex, very shining insects, living in fungi. The sides of the thorax are oblique, and the head small, so as to make the body somewhat pointed in front; the thorax is very closely applied to the trunk, and the elytra are broadly truncate, permitting the tip of the conical abdomen to appear. All the known genera of the family, except Amalocera, are represented in our Atlantic fauna, but Scaphisoma alone has yet been obtained on the Pacific slope.

I. Scutellum distinct; antennæ clavate;
  Posterior tibiæ not spinous;
    First joint of hind tarsi longest; eyes emarginate. **Scaphidium.**
    First joint of hind tarsi scarcely longer than the second; eyes entire. **Scaphium.**
  Posterior tibiæ with rows of small spines; eyes entire. **Cyparium.**
II. Scutellum covered by the base of the thorax; antennæ capillary;
  Posterior coxæ widely distant;
    Antennæ with the joints 9–11 wider. **Bæocera.**
    Antennæ with the joints 6 or 7–11 wider. **Scaphisoma.**
  Posterior coxæ not widely distant; body narrow, compressed. **Toxidium.**

FAM. XVIII.—PHALACRIDAE.

Mentum corneous, flat, of a different form in each genus, but all derived from the quadrate form.

Maxillæ with two lobes, internal one coriaceous, with two small terminal teeth; the outer corneous, ciliate at the tip, which is coriaceous.

Antennæ inserted under a slight frontal margin, 11-jointed, the last three joints forming an oval club.

Prothorax with the side pieces not distinct; prosternum prolonged, entering the emarginate mesosternum behind; coxal cavities not closed behind.

Mesosternum very short, side pieces large, not distinctly divided.

Metasternum large, produced anteriorly, side pieces narrow, partly concealed by the sides of the elytra.

Elytra rounded at tip, entirely covering the abdomen.

Abdomen with five free ventral segments, not differing much in length, the first somewhat longer.

Anterior coxæ globular; middle coxæ transverse, separated by the sternum; posterior contiguous, transverse, flat.

Legs short, stout; thighs broad, compressed; tarsi 5-jointed, with the first three joints hairy beneath, and more or less dilated, the fourth very small, fifth moderate; claws with a basal tooth.

A small number of oval or rounded oval, convex, shining insects constitute this family. They are found on flowers, and sometimes under bark. The elytra have sometimes approximate rows of small punctures, but more usually only a sutural stria. The scutellum is larger than usual, triangular. One of the four genera (Tolyphus) of this family is wanting in our fauna. The other three are separated by the form of the posterior tarsi.

Anterior and posterior tarsi of the same length (tibiæ without spurs). **Phalacrus.**

Posterior tarsi elongated (tibiæ with distinct spurs);

- First joint of posterior tarsi shorter than the second. **Olibrus.**
- First joint of posterior tarsi longer. **Litochrus.**

FAM. XIX.—CORYLOPHIDAE.

Body very small, oval or rounded, glabrous or pubescent.

Antennæ inserted on the front, 9–11-jointed, loosely clavate.

Mandibles small, pectinate on the inner margin.

Maxillæ with a single lobe, palpi 4-jointed, short, variable in form, according to genus.

Front coxæ globose, prominent, contiguous or nearly so; middle coxæ globose, separated by the mesosternum; hind coxæ transverse, not laminate, widely distant.

Tarsi 4-jointed, 3d joint small, concealed in an emargination of the 2d joint.

Ventral segments six, free.

Wings wide, fringed with long hairs, much shorter than in Trichopterygidæ.

This family has been considered by most authors as allied to Coccinellidæ, with which, however, as well-pointed out by DuVal, it has little in common. The wings fringed with long hairs give it a certain affinity with Trichopterygidæ, while the loose antennal club, and the comparatively small size of the 4th joint from the end in several genera show an unmistakable resemblance to Anisotoma and other small Silphidæ. The form of the mandibles and the structure of the tarsi distinguish this family, however, from all allies.

The genera in our fauna are the following, as far as we have recognized them.

Prothorax hood-like, concealing the head. 2.
Head more or less exposed. 5.
2. Antennæ straight; hind angles of prothorax not prolonged. 3.
Antennæ strongly geniculate, 1st joint elongate; hind angles of prothorax more or less prolonged. 4.
3. Antennæ 11-jointed; body oval, not convex. **Sacium.**
Antennæ 10-jointed; body rounded, convex. **Arthrolips.**
4. Glabrous; hind angles of prothorax feebly prolonged; antennæ 10-jointed. **Corylophus.**
Pubescent; hind angles of prothorax much prolonged; tarsi narrow. **Sericoderus.**
5. Prothorax feebly emarginate in front, head slightly exposed; tarsi dilated. **Rhypobius.**
Prothorax strongly emarginate, head fully exposed; tarsi narrow. **Orthoperus.**

Moronillus *Du Val*, and Glœosoma *Woll.*, do not seem to differ from Rhypobius *Lec.*, which has priority. There is a discrepancy in the descriptions of the antennæ of this genus. Du Val figures four small joints between the 2d and the next large one. Wollaston but three, the inner one of which corresponds with two of DuVal's; Dr. LeConte, with two ill-conditioned specimens at his disposal, saw but two, and therefore considered the antennæ as having only 9-joints.

To Arthrolips belongs *Corylophus marginicollis* Lec.

FAM. XX.—COCCINELLIDAE.

Mentum trapezoidal or triangular; ligula prominent oval, palpi 3-jointed, last joint oval, truncate at tip.

Maxillæ with two ciliate lobes, the inner one smaller and more slender, the outer one frequently obsoletely biarticulate; palpi 4-jointed, last joint usually large, and securiform.

Antennæ inserted at the inner front margin of the eyes, base usually exposed, sometimes (Chilocori) covered by a frontal expansion; 11-jointed in our genera, usually short and retractile, long only in Myzia and Coccidula, with a more or less distinct 3-jointed club.

Prothorax transverse, of rather small size, side margin acute, flanks frequently concave for the reception of the antennal club; coxal cavities closed behind, except in Coccidula; coxæ separated by the prosternum.

Mesosternum short, epimera subtriangular.

Metasternum rather large, with epimera and episterna distinct, frequently with a depression at the antero-external angle, for the reception of the middle knees, and distinct curved lines, for the reception of the middle legs, wanting only in the Hippodamiæ.

Elytra convex with distinct epipleuræ, not truncate at tip; epipleuræ frequently foveate for the reception of

Abdomen with five free ventral segments, and sometimes (Hyperaspis) with six or seven; 1st longer, with distinct curved coxal lines.

Front coxæ transverse, separate; middle coxæ rounded, not prominent; hind coxæ transverse, widely separated.

Legs short; front tibiæ sometimes toothed (Brachiacantha); tarsi 3-jointed, 1st and 2d joints dilated spongy beneath, claws appendiculate, cleft, or more rarely (Anisosticta, Næmia) simple.

Sexual characters not very obvious, in some groups apparent in the last ventral segments.

Body usually rounded convex, rarely oblong, head deeply immersed in the prothorax, which is strongly emarginate in front; the species are usually glabrous, but in certain genera (Scymnus, Epilachna, Coccidula) are pubescent.

Without possessing characters of sufficient importance to warrant their reception as sub-families, the Coccinellidæ may be divided into two series:—

Mandibles simple or bifid at tip.	C. GENUINI.
Mandibles with several teeth at tip.	C. PHYTOPHAGI.

Series I.—COCCINELLIDÆ GENUINI.

The bulk of the species, which live exclusively upon Aphides, constitute this series, and may be divided, so far as represented in our fauna, into the following groups:—

Front coxal cavities closed.	2.
Front coxal cavities open; body pubescent.	VI. COCCIDULÆ.
2. Base of antennæ exposed.	3.
Base of antennæ covered by a frontal plate.	III. CHILOCORI.
3. Metasternal and ventral coxal lines distinct.	4.
Metasternal and ventral coxal lines obsolete.	I. HIPPODAMIÆ.
4. Body glabrous.	5.
Body pubescent.	V. SCYMNI.
5. Body loosely articulated, not very contractile.	II. COCCINELLÆ.
Body compact, strongly retractile.	IV. HYPERASPES.

Group I.—**Hippodamiæ.**

These species are less specialized in structure than the other representatives of the family, but do not thereby evidence affinities except to the other groups. They are easily recognized by the more elongate and loosely formed body, and by the usual absence of the mesosternal and ventral lines, though the former are present in *Anisosticta,* and the latter in *Adonia:* but never are both apparent. The legs are therefore longer, more slender, and less retractile than in the following groups: the antennæ are very short. The genera may be thus arranged:—

	Claws simple.	2.
	Claws appendiculate.	3.
	Claws bifid.	4.
2.	Sternal lines distinct, hind angles of prothorax obtuse.	**Anisosticta.**
	Both lines absent; hind angles of prothorax rounded.	**Næmia.**
3.	Third antennal joint slender.	**Megilla.**
	Third antennal joint dilated, triangular.	**Ceratomegilla.**
4.	Sternal and ventral lines absent.	5.
	Ventral lines distinct.	**Adonia.**
5.	Base of prothorax sinuate.	**Eriopis.**
	Base of prothorax rounded.	**Hippodamia.**

Group II.—**Coccinellæ.**

The species of this group are usually rounded, though sometimes oblong as in the preceding group: but in such instances they are readily recognized by the well-defined coxal lines of the metasternum and first ventral. Suppressing the genera of feeble characters, they may be divided as follows:—

	Antennæ short, scarcely longer than the head, epipleuræ not extending to the sutural tip.	2.
	Antennæ long, extending to the middle of the prothorax; epipleuræ extending to the sutural tip; first ventral lines obliterated externally.	3.
2.	First ventral lines angulate externally.	**Coccinella.**
	First ventral lines semicircular complete.	**Adalia.**
	First ventral lines incomplete externally, antennæ longer.	**Anisocalvia.**
3.	Last joint of antennæ truncate.	4.
	Last joint of antennæ rounded.	5.
4.	Prosternum compressed in front; claws bifid.	**Myzia.**
	Prosternum not compressed in front; claws toothed.	**Anatis.**
5.	Body small, pale, with numerous dark spots.	**Psyllobora.**

In all of our species, except in those of Myzia, the claws are broadly toothed, or appendiculated. The epipleural character seems of but little value, the extension to the sutural tip is nearly as distinct in Anisocalvia as in Psyllobora.

Group III.—**Chilochori.**

This is one of the best defined groups in the family, and is at once recognized by the antennæ being inserted under lateral dilatations of the front. The body is also remarkable in form, by the very small size of the prothorax, which is deeply emarginate in front, and rounded behind, by the great convexity of the elytra, which extend laterally beyond the body, with very broad concave epipleuræ, extending to the sutural tip. The under surface of the sides of the prothorax is also deeply concave, and the metasternal and first ventral curved lines are well defined. The legs are short, and moderately retractile, the thighs sulcate beneath for the partial reception of the tibiæ, which are deeply sulcate externally for the reception of the tarsi: claws appendiculate.

There are but two genera, each represented on both sides of the continent:—

Anterior tibiæ with a small tooth on the outer margin; labrum not visible. **Chilocorus.**

Anterior tibiæ without tooth; labrum apparent. **Exochomus.**

Group IV.—**Hyperaspes.**

In this group the contractile power of the glabrous Coccinellæ reaches the greatest development. The species are of small, or very small (Cryptognatha, Pentilia) size: the antennæ are inserted upon the front, at the anterior margin of the eyes, and are very short. The body is hemispherical, compact; the prothorax emarginate in front, rounded behind, sufficiently concave beneath to receive the front legs. The elytra are convex, not dilated as in the preceding group, but with narrow epipleuræ not reaching the tip: on the inner surface beyond the epipleuræ is a strongly marked ridge (as in Rhynchophora, and some Buprestidæ) for the purpose of fixing more closely the elytra on the edge of the abdomen: the epipleuræ are usually foveate for the reception of the knees of the middle and hind pair of legs: the tip is occasionally subtruncate. The metasternal and first ventral lines are strongly marked. The legs are strongly retractile, the thighs sulcate beneath for the reception of the tibiæ, the latter are deeply sulcate externally for the reception of the tarsi: claws appendiculate, rarely (certain Hyperaspis), simple, and acute. Abdomen usually with six visible ventral segments in ♀, and seven in ♂. Our genera are as follows:—

Abdomen with but five ventral segments. 2.
Abdomen with six or seven ventral segments, according to sex. 3.
2. Prosternum lobed in front, covering the mouth. **Cryptognatha.**
  Prosternum not lobed in front; epipleuræ not foveate. **Pentilia.**
3. Front tibiæ with a strong spine on outer edge. **Brachyacantha.**
  Front tibiæ without spine.
    Epipleuræ foveate. **Hyperaspis.**
    Epipleuræ not foveate. **Hyperaspidius.**

Group V.—**Scymni.**

This group scarcely differs from the preceding, except in being strongly pubescent, the antennæ are still smaller and shorter, scarcely as long as the head: the prothorax is deeply emarginate in front, rounded behind. The epipleuræ of the elytra are narrow, do not extend to the sutural tip, and are impressed very near the humeral angle for the reception of the knees of the middle legs. There are five ventral segments (♀) or six (♂). The legs are strongly contractile, the metasternal and ventral lines well marked, the thighs sulcate beneath for the reception of the tibiæ, which are sulcate externally for the tarsi: tarsal claws appendiculate.

Last joint of maxillary palpi large, securiform, head deflexed, eyes moderate. **Scymnus.**
Last joint of maxillary palpi long, slender, pointed; head large, not deflexed, eyes large, prothorax very short. **Cephaloscymnus.**

The first is represented on both sides of the continent by numerous species: the differences in the ventral lines indicate that their importance as generic characters has been exaggerated in other groups. *Cephaloscymnus* is represented by one species *Zimmermanni*, which extends from the Southern and Western States to southern California, but is very rarely found, though so widely diffused.

Group VI.—**Coccidulæ.**

The front coxal cavities open behind distinguish the single genus constituting this group from all the others, on first inspection. But in addition there are the following well-marked characters: the body is oblong oval, pubescent, the head moderate in size, the prothorax strongly transverse, but narrower behind than at the middle, with hind angles well defined; the elytra oblong, elongate, nearly parallel on the sides to beyond the middle, then rounded to the tip, finely and densely punctured, with here and there indications of rows of larger punctures, the epipleuræ are narrower and do not attain the tip: the epimera of the mesothorax attains the coxæ rather widely; the metasternal lines are absent, but the first ventral lines are well defined, and extend more than half the length of the segment. Ventral segments five; legs but feebly retractile, tibiæ not sulcate externally for reception of tarsi; claws bifid. Antennæ extending to the base of the prothorax.

One genus (Coccidula) represents this group, and of it, *C. lepida* Lec. extends from the Atlantic to the Pacific coast. It is found on plants near water; of its habits and transformations no observations have been made. The characters seem to us to indicate an easy transition towards Endomychidæ.

We are doubtful if the American form should be considered as distinct from the European *C. scutellata*. It seems in any event to be a circumpolar form, belonging to an earlier geological period, as is already indicated by the expression of Chapuis, that it is one "des formes de transition."

Series II.—COCCINELLIDÆ PHYTOPHAGI.

The form of the mandibles, which are armed with several teeth, is the only character which distinguishes this series from the genuine Coccinellidæ. It consists of a single group, Epilachnæ, of which three species of Epilachna are the only representatives in our fauna. They are rather large, pubescent insects, resembling in form Chilochorus more than any other genus. The sides of the prothorax are but slightly curved and are broadly explanate: those of the elytra are rather strongly reflexed: the epipleuræ are horizontal, broadly concave, but do not distinctly extend to the sutural tip. The metasternal and ventral lines are well-defined, the legs are moderately retractile; thighs not very deeply sulcate beneath, tibiæ with an acute external edge, and shallow groove for the reception of the tarsi: the claws in Epilachna are cleft, with the lower cusp nearly as long as the upper one. The genus extends from the Eastern States to Arizona, where *E. mexicana* occurs, but has not occurred in maritime California, although *E. corrupta* has occurred at Lake Tahoe.

FAM. XXI.—**ENDOMYCHIDAE.**

Mentum transverse, triangular or rhomboidal; ligula coriaceous at base, membranous at tip; labial palpi short, 3-jointed, last joint larger, cylindrical or triangular, but not securiform.

Maxillæ exposed at the base, with two lobes, both of which are ciliate on the inner side, the inner lobe is smaller and narrower than the outer: palpi 4-jointed, the 4th oval, or triangular, not securiform.

Eyes transverse, moderately large, usually coarsely granulate.

Antennæ, upon the front, distant, about half the length of the body, usually 11-jointed, the last three forming a distinct club.

Head moderate in size, prolonged in front into a short muzzle: epistoma narrow, separated from the front by a very fine line: mandibles with the tip pointed, more or less toothed or ciliate or membranous on the inner margin.

Prothorax margined, side pieces separated from the pronotum by a well-marked suture, but not separate from the prosternum, which is entire, sometimes wide, sometimes very narrow, or obsolete in the middle, coxal cavities open behind; pronotum usually with a transverse sub-basal groove, and two longitudinal impressions.

Mesosternum short, side pieces diagonally divided, epimera.

Metasternum rather long, with narrow side pieces.

Elytra rounded at tip, covering the dorsal segments; epipleuræ distinct.

Abdomen with five free segments, of which the first is sometimes longer than the other.

Coxæ, front and middle globose, somewhat prominent: hind pair transverse.

Legs moderate in length, not retractile in most genera, but apparently so in Liestes; tarsi 4-jointed, or from the atrophy of the third joint, apparently 3-jointed, as in the Coccinellidæ, tarsal joints variable in form, according to tribe and genus, claws simple.

The species in our fauna are not numerous, and are mostly fungivorous in habit. The following tribes are indicated in our fauna; the Eumorphini having no representative.

Tarsi distinctly 4-jointed. MYCETÆINI.
Tarsi dilated, apparently 3-jointed, the third joint being minute, anchylosed with the fourth joint, and hidden between the lobes of the second joint.
Ligula transverse emarginate or truncate. DAPSINI.
Ligula oblong, rounded at tip ENDOMYCHINI.

Tribe I.—**MYCETÆINI.**

The insects of this tribe are of small, or even of very small size, and are easily recognized by the tarsi being narrow, with the third joint quite distinct, though shorter than the second. The characteristic sculpture of the prothorax, seen in most genera of the family, here fails in the genus Alexia, and is but feebly represented in Anamorphus. In several of the genera the form is rounded, and nearly hemispherical, and by this as well as by other characters this tribe makes a nearer approach to the Coccinellidæ than is exhibited by the other tribes of the family. It is, however, worthy of remark, that in this, as in many other instances, the individuality of the type is preserved by the possession of a character seen neither in the other tribes of the family nor in the Coccinellidæ: in this case, the narrow 4-jointed tarsi. If the species were sufficiently numerous, three groups might be readily indicated.

Body hemispherical, prothoracic sculpture feeble (Alexiæ). 1.
Body rounded or oval, prothorax with usual sculpture (Mycetææ). 2.
Body elongate, prothorax narrower at base (Rhanes). 3.
1. Prothorax without sculptured lines; antennæ 10-jointed, club compact. **Alexia.**
    Prothorax with large finely margined basal lobe, and a basal line each side, running forwards, and then curving inwards; antennæ 9-jointed, club elongate, very loose. **Anamorphus.**

2. Antennæ 10-jointed; prothorax with well-marked basal lines extending half the length, sides strongly margined. **Symbiotes.**
   Antennæ 11-jointed; prothorax with a curved line running each side from base to apex: sides finely but distinctly margined. **Mycetæa.**
3. Prothorax with deep basal impressions, but without lines. 4.
   Prothorax with deep impressions, and lines extending from base half the length: body glabrous. **Rhanis.**
   Prothorax very transverse, body pubescent. **Liestes.**
   Prothorax not transverse, body glabrous (antennal club of ♂ very large). **Phymaphora.**

The two species here referred to Symbiotes have been described by Crotch as Alexia, to which genus they bear no resemblance. The single undescribed species which we have placed in Alexia has much similarity to the European *A. pilifera*, but differs in the prothorax being largely lobed at the middle of the base, with the lobe truncate. It may, therefore, be named *A. lobata* Lec.

Tribe II.—**DAPSINI.**

Prosternum not prolonged behind; front coxæ contiguous or nearly so. 2.
Prosternum prolonged behind, partly covering the mesosternum; front coxæ separated. 3.
2. Prothorax subquadrate, feebly narrowed behind; base with a deep transverse line and a short longitudinal one each side, sides sinuate margined; elytra convex, suture very finely margined. **Lycoperdina.**
3. Prosternum narrow between the coxæ. 4.
   Prosternum wide, margined: prothorax with deep transverse and longitudinal basal lines. 5.
4. Prothorax without longitudinal impressions; body elongate, last ventral segment of ♂ with a crest and impression. **Xenomycetes.**
   Prothorax with longitudinal and transverse lines. **Aphorista.**
5. Pubescent. 6.
   Glabrous; prothorax with finely margined sides; elytra spotted. **Mycetina.**
6. Prothorax finely margined. 7.
   Prothorax with marginal line remote from the edge. **Stenotarsus.**
7. Prothorax without transverse basal line. **Epipocus.**

Lycoperdina and Stenotarsus are represented in the Atlantic region; Xenomycetes in the alpine regions of California: the other genera occur on both sides of the continent. Xenomycetes is remarkable for the singular crest and impressions of the last ventral segment of the ♂.

Tribe III.—**ENDOMYCHINI.**

One species, *Endomychus biguttatus* Say, found in the Atlantic region, represents this tribe in our fauna. It is a very pretty shining black, glabrous insect, with scarlet elytra, each ornamented with two black spots. There is no special difference between this and the preceding tribe, except in the form of the ligula, which is here oblong and rounded at tip. The genus differs from the foreign genera by the following characters:—

Prosternum flat, spatulate, not margined; antennæ elongate, with loose not large club; sides of prothorax feebly sinuate, strongly but narrowly margined; longitudinal basal impressions very deep, but the transverse line is represented only by a very fine basal margin.

FAM. XXII.—**EROTYLIDAE.**

Mentum of variable form, well developed, usually divided into three more or less distinct surfaces, anterior margin bisinuate: ligula variable, palpi 3-jointed, first joint slender, second short, third variable in form.

Maxillæ exposed at the base, with two lobes, the outer one subtriangular, as long as the inner one, which slender, ciliate, sometimes with one or two spines: palpi 4-jointed, first joint slender, second and third short and obconical, fourth variable. Submentum transverse.

Eyes finely or coarsely granulated, oval or rounded.

Antennæ 11-jointed, inserted at the sides of the front, on the inner anterior margin of the eyes, the last three or four joints forming a distinct club.

Head small, or moderate, immersed in the prothorax to the hind margin of the eyes, with the front forming a more or less distinct muzzle.

Labrum transverse, rounded or emarginate, ciliate. Mandibles stout, curved, toothed or cleft at tip, inner margin often bordered with membrane.

Prothorax with side margin distinct; side pieces separate from the prosternum, which is not abbreviated; coxal cavities usually closed, but open in Langurini, never confluent, always separated by the prosternum.

Mesosternum moderate in size, side pieces somewhat variable in form.

Metasternum long, in proportion to the form of the body, side pieces narrow, linear, epimera usually visible.

Elytra entire, with well-defined epipleuræ.

Abdomen with five nearly equal segments.

Coxæ never contiguous, front and middle ones globose, not prominent, hind pair transverse, not laminate.

Legs moderate in length, slender or stout, thighs rather thickened in the middle, slightly concave beneath, tibiæ straight, or slightly curved; tarsi similar in both sexes, 5- or 4-jointed, claws simple.

The 4-jointed tarsi of the greater number of species of this family have induced many systematists to place this family in proximity to the Chrysomelidæ, with which in reality it has no affinity. While admitting the resemblance in the form of the feet, the differences in the antennæ, the larvæ, the methods of life, and finally, the impossibility of separating the pentamerous from the tetramerous forms in this family, seem to require that, on the received principles of classification, the Erotylidæ should be placed in the Clavicorn series. A similar instance of the want of value of the number of tarsal joints, as a basis of classification, will be found in the Endomychidæ, and examples in single genera may be found abundantly in the other Clavicorn families as set forth in the present work.

The tribes, as defined by Mr. Chapuis, are three, of which the Helotides have no representative in our fauna. The other two are easily distinguished as follows:—

Metathoracic epimera not distinct: front coxal cavities open. LANGURINI.
Metathoracic epimera separated from the episterna by a distinct suture: front coxal cavities entire. EROTYLINI.

Tribe I.—LANGURINI.

This tribe is very homogeneous, and is represented in our fauna on both sides of the continent by several species of Languria. They are long, narrow insects, resembling in form Elateridæ, and of shining black and red colors. The eyes are always finely granulated. The characters above given will enable them to be readily recognized; they are found on plants, and do not seem to have the fungivorous tendencies of the other tribes.

Tribe II.—EROTYLINI.

Not having made a special study of this family, which is but feebly represented in our fauna, we have followed in its division into groups and genera, the indications of Mr. Crotch and Dr. Chapuis, except where they were in manifest conflict with our judgment. The species live exclusively upon fungi.

Tarsi distinctly 5-jointed. Maxillæ without apical tooth. DACNES.
Tarsi with fourth joint small, connate with the fifth ;
  Maxillæ not toothed at tip. TRITOMATA.
  Maxillæ with two apical spines. EROTYLI.

Group I.—**Dacnes.**

A few species of very different sizes represent this group on both sides of the continent. The genera may be distinguished as follows :—

Tarsi narrow ;
  Antennæ with tenth and eleventh joint connate. **Plœosoma.**
  Antennæ distinctly 11-jointed. **Dacne.**
Tarsi dilated, spongy beneath, fourth joint smaller. **Megalodacne.**

Hypodacne Lec. is synonymous with the previously described Atlantic island genus Plœosoma *Woll.* The first genus has one species in the Atlantic region, and in the Antilles, the second on both slopes of the continent. The third is represented by two species in the Atlantic region.

Group II.—**Tritomata.**

In the genera composing this group, the tarsi are pseudotramerous, that is to say, the fourth joint is very small, and the preceding ones dilated and covered beneath with a brush-like pubescence. The maxillæ, as above mentioned, are not toothed, and the last joint of the maxillary palpi are triangular and dilated. The genera of this group have, perhaps, been unreasonably multiplied; but, as stated and defined by the limited representation in our fauna, may be tabulated as follows :—

Last joint of palpi widely securiform.
  Eyes coarsely granulate. **Ischyrus.**
Last joint of palpi oval, or slightly triangular: eyes finely granulate.
  Middle area of mentum large, transverse. Antennal club 4-jointed. **Mycotretus.**
  Middle area of mentum small, triangular. **Tritoma.**

We have suppressed Cyrtotriplax *Crotch*, as not sufficiently distinct from Tritoma *Fabr.* (nec *Geoffr.*), and Triplax as defined by him in the synopsis (Trans. Amer. Ent. Soc., April, 1873, p. 349); the only difference being that the prothorax is finely margined at base in the second genus.

Group III.—**Erotyli.**

This group is easily recognized by the apical spines of the maxillæ. It is represented in our fauna by but one Mexican species, *Erotylus Boisduvali,* which extends into New Mexico and Arizona; it is considered by Mr. Crotch as a separate genus, Cypherotylus. The characters given for the definition of the new genus do not seem to be satisfactory, as separating it from Erytylus proper.

FAM. XXIII.—**COLYDIIDAE.**

Mentum subquadrate, rarely covering the base of the maxillæ; ligula corneous; palpi 3-jointed, short.

Maxillæ with two lobes; palpi short, 4-jointed.

Antennæ inserted under the margin of the front, 10- or 11-jointed, rarely 8-jointed, sometimes gradually thickened, usually terminated by a small club.

Prothorax with the side pieces not distinct; anterior coxal cavities almost always closed behind, sometimes distant, sometimes confluent; prosternum scarcely ever prolonged behind the coxæ, rarely inclosed behind by the epimera, as in the Rhynchophora.

Mesosternum small, epimera not attaining the coxæ.

Metasternum large; side pieces long, narrow; epimera not visible.

Elytra never truncate, always covering the abdomen.

Abdomen with five ventral segments, the three or four anterior ones more or less connate.

Anterior and middle coxæ small, globular, not prominent; posterior transverse, either distant or contiguous, not prominent.

Legs short; tibiæ not dilated; terminal spurs usually small, frequently indistinct; tarsi 4-jointed, not dilated; ungues simple.

Small insects, usually of an elongate or cylindrical form, living under the bark of trees, in fungi, or in the earth. The small globular anterior and middle coxæ, and the 4-jointed simple tarsi, will enable them to be readily distinguished from any of the neighboring families.

The introduction of Murmidius from the Histeridæ seems to indicate the division of the family into two sub-families.

Antennæ inserted under a distinct frontal ridge, anterior coxæ distant from the mesosternum. Colydiinæ.
Antennæ inserted on the front, anterior coxæ inclosed behind by the mesosternum. Murmidiinæ.

Sub-Family I.—COLYDIINÆ.

The genera of this sub-family are numerous, and are divisible into tribes in the following manner:—

Antennæ capitate, retractile, arising close to the eyes. 2.
Antennæ perfoliate, not retractile, distant from the eyes. Rhagoderini.
2. Last joint of palpi not acicular. 3.
    Last joint of palpi acicular. 6.
3. Front coxæ slightly separated; head horizontal. 4.
    Front coxæ distant. 5.
    Front coxæ nearly contiguous; head deflexed. Deretaphrini.
4. First joint of tarsi short. Synchitini.
    First joint of tarsi longer than the second. Colydiini.
5. Antennæ arising under a frontal margin; first ventral segment not elongate; trochanters free. Pycnomerini.
    Antennæ free at base; first ventral elongate; trochanters closely connate with the femora. Bothriderini.
6. First ventral elongate; antennæ free at base. Cerylonini.

Tribe I.—RHAGODERINI.

Elongate, costate, bristly species, represented by two genera which occur in the Pacific region, and indicate separate subtribes.

Anterior coxal cavities open behind; eyes entire. Sub-tribe Rhagoderini.
    Head narrowed behind, forming a distinct neck. **Rhagodera.**
Anterior coxal cavities closed behind; eyes divided. Sub-tribe Anchommini.
    Head not narrowed behind. **Anchomma.**

Tribe II.—SYNCHITINI.

The genera are numerous, elongate or oval in form, and usually costate and bristly.

Anterior coxal cavities open behind.	
Antennæ 10-jointed, club solid.	
Head without antennal grooves.	**Synchita.**
Head with distinct grooves.	**Cicones.**
Antennæ 11-jointed, club 2-jointed.	
Eyes free, rounded.	
Head without antennal grooves.	**Ditoma.**
Head with distinct antennal grooves.	
Tibiæ with distinct terminal spurs.	**Eudesma.**
Tibiæ without terminal spurs.	**Endophlœus.**
Eyes emarginate by the sides of the front.	
Antennal grooves distinct.	**Phlœonemus.**
Anterior coxal cavities closed behind.	
Antennæ with a 2-jointed club; no tibial spurs.	**Coxelus.**
Antennæ with a 3-jointed club; small tibial spurs.	**Lasconotus.**

Endophlœus and Phlœonemus occur on the Pacific coast, Cicones and Eudesma on the Atlantic side, the other genera have representation on both sides of the continent.

Tribe III.—COLYDIINI.

Species having a cylindrical, sometimes very slender form; found under bark. Aglenus has been introduced from Europe. Eulachus, formerly placed in this tribe, has been united with Ditoma of the Synchitini.

The genera indicate three groups:—

Anterior coxæ narrowly inclosed behind, prosternum at tip attaining the posterior margin.	Group Colydii.
Metasternal side pieces moderate. Anterior tibiæ finely denticulate at outer apical angle.	**Aulonium.**
Metasternal side pieces linear. Anterior tibiæ with outer apical angle prolonged.	**Colydium.**
Anterior coxæ broadly inclosed behind, the epimera meeting on the median line, prosternum not attaining the margin.	Group Nematidii.
Metasternal side pieces covered.	**Nematidium.**
Anterior coxal cavities open behind. Head without eyes.	Group Agleni.
Metasternal sides pieces narrow.	**Aglenus.**

Nematidium occurs in the Gulf States, Aulonium and Colydium are represented on both sides of the continent. The introduced Aglenus occurs in the Atlantic region and California.

Tribe IV.—**DERETAPHRINI.**

This tribe contains three genera of elongate cylindrical form.

Tarsi rather short, the first three joints not as long as the fourth. Antennæ ten-jointed, club solid. Anterior coxæ contiguous, their cavities very narrowly closed behind. **Oxylæmus.**

Tarsi moderately long, first three joints longer than the fourth. Antennæ eleven-jointed, club three-jointed, anterior coxæ distinctly separated, their cavities distinctly closed behind. **Deretaphrus.**

Tarsi long, first joint always longer than the next two together, and that of the middle tarsus much longer. Antennæ eleven-jointed, club two jointed. Anterior coxæ contiguous, their cavities distinctly closed behind. **Sosylus.**

Deretaphrus occurs in Oregon and Australia, the other two genera have one species on each side of the continent.

Tribe V.—**PYCNOMERINI.**

Elongate, somewhat flattened species, covered with coarse punctures, having on the elytra rows of very large punctures. The palpi are cylindrical, and the posterior coxæ, as in the preceding tribe, are distant, but the ventral segments are equal in length.

Antennæ with eleven distinct joints, club 2-jointed. **Penthelispa.**

Antennæ with ten apparent joints, club solid. **Pycnomerus.**

Penthelispa *Pascoe* was subsequently described in the first edition of this work as *Endectus*. Two species of the first, and one of the second genus occur in the Atlantic region.

Tribe VI.—**BOTHRIDERINI.**

In this tribe the posterior coxæ are widely separated, and the first ventral segment is elongated. The species are somewhat flattened, and the elytra are ribbed; the buccal cavity is deep, and the oral organs are retracted; the mentum is transverse and concave, and the inferior margin of the mandibles is dilated at the base; the eyes are not prominent; the antennæ are short, 11-jointed, with the club 2-jointed.

Head horizontal or nearly so. Anterior coxæ very narrowly inclosed behind. Outer apical angle of tibiæ not prolonged. **Bothrideres.**

Head deflexed. Anterior coxæ very distinctly inclosed. Outer apical angle of tibiæ prolonged. **Erotylathris.**

These genera belong to the Atlantic region. *Machlotes* Pascoe is said by Reitter to be the same as the previously described genus Erotylathris *Motsch.*

Tribe VII.—**CERYLONINI.**

Small, oblong or oval, flattened insects, having all the coxæ widely separated, the first ventral segment elongated, and the last joint of the palpi small and acicular, the penultimate thick; lobes of the maxillæ long and slender.

Anterior coxal cavities closed behind. Antennæ 10-jointed, club solid. **Cerylon.**

Anterior coxal cavities open. Antennæ 11-jointed, club 2-jointed. **Philothermus.**

Sub-Family II.—MURMIDIINÆ.

This sub-family contains two genera, each represented by one species. The head is more or less retractile, protected by a well-marked prosternal lobe in Murmidius, or a short one in Mychocerus. The antennæ are frontal, 10-jointed, terminated by a solid club, apparently of two joints, received in a cavity in the anterior angle of the thorax. The anterior coxæ are inclosed behind by the mesosternum. The posterior coxæ are small. The legs are retractile, and received in excavations at the sides of the respective segments, the cavities for the posterior legs are in part in the abdomen.

Diverse opinions have been expressed regarding the position of these genera, and they have been placed in Colydiidæ and Histeridæ, and have been made a separate family by DuVal. They seem better placed here as a sub-family, at least for the present.

The genera are as follows:—

Antennal cavity visible from above; prosternal lobe well marked, concealing the parts of the mouth beneath; metasternal side pieces concealed by the epipleuræ. **Murmidius.**

Antennal cavity opening in front, not visible from above; prosternal lobe truncate; metasternal side pieces with the sutures very evident. **Mychocerus.**

Murmidius ovalis has been widely diffused by commerce. *Mychocerus depressus* occurs in the Southern States.

FAM. XXIV.—**RHYSSODIDAE.**

Mentum very large, quadrate, bisinuate in front, covering entirely the mouth beneath; palpi short, 3-jointed.

Maxillæ with two small lobes; palpi short, 4-jointed.

Antennæ inserted under the frontal margin, 11-jointed, joints nearly equal, rounded, the first larger, but also rounded.

Prothorax beneath with the side pieces distinct, the suture running parallel with the lateral margin; coxal cavities closed behind, widely separated.

Mesosternum very short, side pieces diagonally divided, epimera reaching the coxæ.

Metasternum very large; side pieces very narrow, almost concealed by the elytra.

Elytra rounded at tip, covering the abdomen, with six or seven deep furrows, or rows of punctures; scutellum wanting.

Abdomen with six ventral segments; the first very widely separating the coxæ, broadly triangular; the three anterior ones closely connate.

Anterior coxæ small, globular, not prominent; middle coxæ globular, small; posterior coxæ small, subtriangular, prominent internally, all of them widely separated.

Legs short; anterior tibiæ somewhat dilated, terminated by two hooks, on the under surface sulcate towards the tip, subemarginate, and armed above the tip with a spine; middle and posterior tibiæ with an internal terminal spine, spurs distinct; tarsi 5-jointed, very slightly pubescent beneath; posterior trochanters prominent, oval.

Two genera, of singular form, found under bark, constitute this family, which in several of its characters resembles the Carabidæ, but yet not so as to belong to the same series. The antennæ are composed of equal globular joints; the head is strongly constricted behind into a neck, and is sculptured with two deep grooves, converging behind; the thorax is long, has three entire grooves, and two short posterior broader ones (Clinidium), or three deep entire ones, and two finer lateral lines (Rhyssodes); the elytra are deeply grooved in Clinidium, coarsely striato-punctate in Rhyssodes.

Eyes lateral, rounded, distinctly granulated.	**Rhyssodes.**
Eyes superior, narrow, scarcely granulated.	**Clinidium.**

These genera are represented on both sides of the continent, by one species in each region.

FAM. XXV.—CUCUJIDAE.

Mentum small, subquadrate, usually transverse; ligula corneous, prominent; palpi short, 3-jointed.

Maxillæ with two lobes; palpi 4-jointed.

Antennæ inserted at the margin of the front, 11-jointed, sometimes long and slender, sometimes with the outer joints slightly enlarged, the first joint usually elongated.

Prothorax with the side pieces not separate from the upper piece: coxal cavities separated by the prosternum, widely open behind, with a fissure externally leading to the episternal suture in the second and third sub-families, entirely closed in the first, fourth, and fifth.

Mesosternum moderate; epimera reaching the coxæ.

Metasternum large, quadrate; episterna long, narrow, covered.

Elytra rounded at tip and covering the abdomen, except in the fourth sub-family; usually flat, strongly margined; scutellum distinct.

Abdomen with five free ventral segments, equal in length.

Anterior coxæ small, globular, not prominent; middle coxæ small, subtriangular, not prominent; posterior coxæ nearly contiguous, transverse, slightly prominent.

Legs moderate; tibiæ slender, with two small terminal spurs; tarsi with the first joint usually small, sometimes 5-jointed in both sexes; the posterior tarsi sometimes 4-jointed in the males.

The species which constitute this family are, with one exception (Narthecius), very depressed, and usually of an elongate form. They live under bark.

Monotoma, included in this family by DuVal, has been separated with some other genera as a distinct family.

This family divides into five sub-families, of which the second is considered by DuVal as forming a distinct family. The sole character, the concealment of the maxillæ by corneous plates, does not appear of sufficient importance to warrant such a conclusion, and we therefore follow the example of Erichson and Lacordaire in considering it as a member of the present family.

Anterior coxal cavities closed behind; tarsi not lobed beneath, with the fourth joint small. SILVANINÆ.

Anterior coxal cavities open behind;
  Maxillæ covered by corneous plates. PASSANDRINÆ.
  Maxillæ exposed. CUCUJINÆ.

Anterior coxal cavities closed behind; tarsi with the third joint lobed;

Fourth tarsal joint not smaller than the third.	HEMIPEPLINÆ.
Fourth tarsal joint very small.	TELEPHANINÆ.

Sub-Family I.—SILVANINÆ.

In this sub-family are contained but two genera, having the genæ prominent and acute; the antennæ with the first joint not elongated, and the outer ones enlarged; the anterior coxal cavities are broadly closed behind, and the tarsi, 5-jointed in both sexes, have the fourth joint small.

The genera are two in number, and the species, which are of small size, are found under bark or in grain.

Antennæ with the joints 9–11 somewhat suddenly larger.	**Silvanus.**
Antennæ with outer joints gradually enlarged.	**Nausibius.**

The type of the last genus is *N. dentatus*, having several large teeth on the sides of the thorax. It has been diffused over the whole globe in articles of commerce.

Sub-Family II.—PASSANDRINÆ.

In this sub-family the maxillæ are concealed by large corneous plates, which vary in form according to the genus. The hind tarsi are 5-jointed in both sexes. The front coxal cavities are open behind.

Jugular plates broad, rounded in front:	
First tarsal joint short.	**Catogenus.**
First tarsal joint not shorter.	**Scalidia.**
Jugular plates narrow, very long, acute.	**Prostomis.**

Catogenus rufus varies greatly in size, and occurs in the Atlantic region: *Scalidia linearis* in Lower California and in Louisiana (?): *Prostomis americana* Crotch is found in California, and scarcely differs from the European *P. mandibularis.*

Sub-Family III.—CUCUJINÆ.

In this sub-family the anterior coxal cavities are open behind, and the base of the maxillæ is exposed. The tarsi are filiform, either 5-jointed, or with the hind ones of the males 4-jointed.

Two tribes are indicated by our genera:—.

Antennæ with the first joint usually moderate; hind tarsi of ♂ 4-jointed. Cucujini.
Antennæ with the first joint always elongated; hind tarsi of ♂ 5-jointed. Brontini.

Tribe I.—CUCUJINI.

Prosternum narrow. 2.
Prosternum wide; body depressed. 4.
2. Hind angles of head not prominent. 3.
Hind angles of head prominent; antennæ not thicker towards the tip. **Cucujus.**
3. Body depressed; eyes contiguous to prothorax. **Pediacus.**
Body cylindrical; eyes distant from prothorax. **Narthecius.**
4. Eyes distant from prothorax, which is margined. 5.
Eyes contiguous, or nearly so, to the prothorax; labrum large, transverse, rounded in front. 6.
5. Elytra very short; labrum not emarginate. **Ino.**
Elytra long; labrum broad, emarginate; mandibles emarginate at tip; antennæ filiform. **Parandrita.**
6. Spurs of front tibiæ unequal. **Læmophlœus.**
Spurs of front tibiæ equal. **Lathropus.**

In the narrow and less depressed species of Læmophlœus (*L. angustulus* Lec.) the prothorax is not margined, and the eyes are smaller, less convex, and are somewhat distant from the front edge of the prothorax. The antennal joints are rounded, and the last three distinctly larger. Such species might be well separated as a distinct genus, allied to *Caulonomus* Woll. from Madeira, which, however, is remarkable for the truncate elytra, leaving the pygidium exposed.

Some species of Læmophlœus, undescribed, have the first antennal joint of the ♂ elongated, curved, and acute at tip, and the eyes distant from the prothorax; these are also more convex, and might properly be separated as allied to Caulonomus. Similar antennal characters, however, occur in certain genuine Læmophlœus, with depressed form and eyes nearly contiguous to the prothorax.

Ino occurs in Texas, Narthecius in both of the regions. Parandrita (established on *L. cephalotes* Lec.) in Arizona, and the other genera on both sides of the continent.

This family is evidently an antique and synthetic type, which exhibits alliances with both Heteromera and Rhynchophora more than any other Clavicorn family. These affinities are perhaps most obvious in a small Mexican black species (genus, if described, unknown to me), which has the upper surface smooth, polished, and somewhat convex, the prothorax narrower than the elytra; the eyes nearly contiguous to the prothorax; the first joint of the antennæ very long, the last three somewhat enlarged. The front is prolonged into a narrow flat beak, as in Rhinosimus, about three times longer than the head proper. It was collected by Truqui in Mexico, and kindly given to us by Mr. Alexander Fry, of London. If the species be still undescribed, it may properly be named *Xenorhinus Truquii.*

Tribe II.—**BRONTINI.**

This tribe consists of two genera, found on both sides of the continent, and also in Europe. Brontes is generally diffused, Dendrophagus only in the northern regions. The elytra are striate in both.

Body very elongate; sides of thorax parallel; mesosternum truncate in front. **Dendrophagus.**

Body less elongate; sides of thorax strongly serrate, anterior angles prolonged; mesosternum strongly emarginate in front. **Brontes.**

Sub-Family IV.—HEMIPEPLINÆ.

In this sub-family the anterior coxal cavities are nearly confluent, and narrowly closed behind; the elytra are rounded at tip, but shorter than the abdomen. The anterior and middle tarsi are somewhat dilated, and the fourth joint is not smaller than the third, and is slightly lobed beneath; the hind tarsi (of both sexes) are 4-jointed. The body is very elongated, linear, and depressed; the head is narrowed behind the eyes, which are large. The thorax is somewhat narrowed behind, with a large puncture each side, near the base; the antennæ are a little longer than the head and thorax, very slightly thickened at the extremity, with the first joint as long as the three following; the maxillæ are not covered, and the genæ are but slightly prominent.

Hemipeplus marginipennis lives on *Chamærops palmetto* in the Southern States.

Sub-Family V.—TELEPHANINÆ.

In this sub-family the anterior coxal cavities are broadly closed behind, as in the first sub-family, but the third joint of the tarsi is lobed beneath; the maxillæ are exposed, and the genæ but slightly prominent.

Two genera occur in our fauna, the second of which has been introduced in articles of commerce:—

Antennæ with first joint elongate.	**Telephanus.**
Antennæ with first joint short.	**Psammœcus.**

The latter has been found once in Oregon, and its synonymy affords an excellent example of confusion, which can be only removed by exhaustive studies of each family of insects in detail. This species was first described from Mauritius as *Psammœcus Desjardinsii:* then by Wollaston from Madeira as *Cryptamorpha musæ;* and finally by LeConte from Oregon as *Pseudophanus signatus.*

FAM. XXVI.—CRYPTOPHAGIDAE.

Mentum moderate, trapezoidal, sinuate in front; ligula corneous, usually with distinct paraglossæ; labial palpi short, 3-jointed.

Maxillæ exposed at the base, with two coriaceous lobes, the inner one with a terminal hook; maxillary palpi 4-jointed, short.

Eyes rounded, moderately strongly granulated.

Antennæ 11-jointed, with the joints 9–11 larger, forming a club.

Head usually moderate in size, not narrowed behind, front sometimes moderately prolonged; labrum distinct, transverse.

Prothorax with the side pieces not separate; prosternum separating the coxæ, usually prolonged behind; coxal cavities open behind.

Mesosternum articulating with the prosternum, frequently emarginate in front; side pieces not attaining the coxæ.

Metasternum large, side pieces narrow.

Elytra rounded behind, entirely covering the abdomen.

Abdomen with five free ventral segments, the first somewhat longer than the others.

Coxæ, anterior oval or rounded; middle ones rounded; posterior ones transverse; all of them separated by the respective sterna.

Legs short; tibiæ nearly linear, with small terminal spurs; tarsi sometimes 5-jointed, with the fourth joint smaller; the hind ones are only 4-jointed in the males of several genera; the joints are clothed beneath with long hair, and the first three of the anterior pair are frequently dilated in the male.

Insects of small size and of variable form, but never very depressed, and with the thorax nearly or quite as wide as the elytra. They live on fungi and other decomposing vegetable matters. Some are found flying in the evening twilight, and upon board-piles.

We have limited this family in the same manner as Lacordaire, and cannot adopt the views of DuVal, who has joined with it Silvanus, and excluded Telmatophilus. We do not find the anterior coxæ globose, as described by Erichson, Lacordaire, and DuVal, except in Atomaria and the allied genus Ephistemus.

The characters of the family are nearly those of Cucujidæ, but the greater length of the first ventral segment, and different form of body, enable the genera to be readily distinguished.

Three tribes are indicated as follows:—

Tarsi with fourth joint very small, the second and third lobed. TELMATOPHILINI.

Tarsi with the joints not lobed beneath;

Antennæ inserted at the sides of the front. CRYPTOPHAGINI.

Antennæ inserted at the anterior part of the front. ATOMARIINI.

Tribe I.—TELMATOPHILINI.

The antennæ are inserted at the sides of the front, which is narrowed and prolonged; the clypeal suture is not visible; the anterior coxæ are slightly oval; the prosternum is prolonged, meeting the concave mesosternum. The tarsi are 5-jointed in both sexes, the fourth joint is very small, and the third is prolonged beneath into a lobe; the second joint is slightly lobed.

The species are found on plants near water, and are known only from the Atlantic district. Loberus resembles, at first sight, a small Halticine of the genus Crepidodera; the color is shining black, the thorax but sparsely punctured, with a transverse impression very near the base; the elytra have striæ of fine punctures, from which proceed very short fine hairs.

The genera are thus distinguished:—

Ninth joint of antennæ very little wider than eighth.
  Body above punctured and pubescent; thorax not impressed. **Telmatophilus.**
Ninth joint as wide as the tenth; surface very feebly pubescent.
  Thorax transversely impressed at base; elytra punctured in striæ. **Loberus.**
  Thorax not impressed at base; elytra irregularly punctured. **Tomarus.**

Tribe II.—**CRYPTOPHAGINI** (genuini).

The antennæ are inserted at the sides of the front, which is sometimes prolonged; the ninth joint of the antennæ is scarcely narrower than the tenth. The anterior coxæ are decidedly transverse. The tarsi are sometimes 5-jointed in both sexes, but usually the hind tarsi of the male are 4-jointed; the joints are not lobed beneath, and the fourth is but little smaller than the third. The anterior tarsi of the males are slightly dilated, and hairy beneath.

Two groups are known by the following characters:—

Mesosternum deeply emarginate, receiving the prosternum. ANTHEROPHAGI.
Mesosternum not emarginate. CRYPTOPHAGI.

Group I.—**Antherophagi.**

The genus Antherophagus alone, represented by species in the Atlantic district, Central region, and Alaska, constitutes this group, which differs from the next not only by the prosternum being more prolonged, with the tip received into the deeply emarginate mesosternum, but by the very different form of the body, which is oval, and resembles considerably a Nitidulide of the genus Epuræa. The head is flat, the front not prolonged, and in the male is deeply incised at tip, exposing a membranous triangular epistoma. The antennæ of the female are clubbed, as usual; those of the male are stout, and scarcely thickened at the end. The mandibles are prominent, and suddenly incurved at the tip. The hind tarsi of the male are 4-jointed. The genus lives on flowers. Our species are finely punctured, and densely clothed with fulvous hair.

Group II.—**Cryptophagi.**

Small insects, of an elongated form, living in decomposing vegetable matter; usually of a brown color, and clothed with rather coarse hair. The sides of the thorax are usually toothed. The prosternum is slightly prolonged, but the mesosternum is not emarginate for its reception. The antennæ and front are alike in both sexes, and the latter is somewhat prolonged.

The posterior tarsi of the male in our genera have but four joints.

Thorax emarginate at apex; surface glabrous. **Emphylus.**
Thorax truncate at apex and base; surface pubescent.
  Front finely margined over the base of the antennæ; fourth joint of tarsi short. **Henoticus.**
  Front not margined; fourth joint nearly as long as the first. **Cryptophagus.**

Tribe III.—**ATOMARIINI.**

The antennæ are inserted between the eyes, at the anterior part of the front, and are usually very closely approximated. The mentum is tridentate in front. The anterior coxæ are rounded. The tarsi are not lobed beneath; the fourth joint is smaller than the third. The species are of very small size, and are found flying in the evening, and about wood-piles. The two groups of Atomaria recognized by previous authors have been separated as genera by Reitter.

Posterior tarsi of male 4-jointed; form elongate, pubescent. **Cænoscelis.**
Posterior tarsi of both sexes 5-jointed.
  Oblong or oval; pubescent. **Atomaria.**
  Ovate, glabrous; prosternum broad. **Ephistemus.**

FAM. XXVII.—**MYCETOPHAGIDAE.**

Mentum transverse, trapezoidal; ligula usually corneous, without paraglossæ; labial palpi 3-jointed.

Maxillæ with two lobes, ciliate at the extremity; maxillary palpi 4-jointed.

Eyes tolerably large, transverse or rounded, strongly granulated.

Antennæ inserted immediately in front of the eyes, 11-jointed, the outer joints gradually or suddenly enlarged.

Head short; frontal suture distinct in the first tribe, wanting in the third; labrum short, covering the mandibles, which are short, acute, and not prominent.

Prothorax with the side pieces not separate, as wide as the elytra at the base; anterior coxal cavities open behind in the first tribe, closed in the third.

Mesosternum narrowly separating the middle coxæ.

Metasternum moderate, side pieces narrow.

Elytra usually covering the abdomen, and rounded at tip.

Abdomen with five free and equal ventral segments.

Coxæ, anterior oval, rounded, somewhat prominent; middle rounded; posterior transverse, not contiguous.

Legs slender; tibiæ nearly linear, with small terminal spurs; tarsi filiform, 4-jointed in the first and second tribes; lobed beneath, and 5-jointed, with the fourth joint small, in the third tribe; ungues simple.

The insects of this family live on fungi and under bark. They are oval, rarely elongate, slightly convex, densely punctured, and hairy. Many have the elytra handsomely variegated with spots.

Tarsi filiform, 4-jointed.	
Front tarsi ♂ 3-jointed.	MYCETOPHAGINI.
Tarsi similar in the sexes.	MYRMECHIXENI.
Tarsi lobed beneath, 5-jointed.	DIPHYLLINI.

Tribe I.—MYCETOPHAGINI.

The species of this tribe are finely punctured insects, clothed with prostrate hair. The anterior coxal cavities are open; the tarsi are 4-jointed and filiform, the anterior pair in the male having but three joints. The frontal suture is always distinct, and usually deep.

Our genera are:—

Eyes transverse;	
Antennæ gradually enlarged externally.	**Mycetophagus.**
Antennæ with joints 9–11 suddenly larger.	**Triphyllus.**
Eyes rounded; antennæ with joints 9–11 suddenly larger;	
Clypeal suture not deeply impressed.	**Litargus.**
Clypeal suture deep.	**Typhæa.**
Eyes rounded; antennæ with joints 10–11 suddenly larger.	**Berginus.**

Mycetophagus and Litargus are generally diffused; *Typhæa fumata* has been imported by commerce, and is found in houses. One species of Triphyllus is found on each side of the continent. Berginus occurs in Pennsylvania.

Tribe II.—**MYRMECHIXENI.**

The two genera composing this tribe have been shifted about from one part to another of the Clavicorn series, and seem equally out of place in every position assigned to them. They are very small inconspicuous insects, having a rather elongate form, with the prothorax narrower than the elytra, which are a little shorter than the abdomen, permitting the last dorsal segment to be partly visible. The front is transversely impressed in Myrmechixenus, but not so in Hypocoprus. The tarsi are 4-jointed, slender.

Antennæ with last four joints larger, elytra not truncate.	**Myrmechixenus.**
Antennæ with last three joints larger, elytra truncate.	**Hypocoprus.**

Myrmechixenus lathridioides Crotch, has been found from Washington southwards, introduced with green-house plants. A species of Hypocoprus, probably identical with the European *H. formicetorum*, was collected in ant nests in Colorado by Mr. Schwarz.

Tribe III.—**DIPHYLLINI.**

This tribe contains a very small number of species, agreeing in form with those of the first, but coarsely punctured, with less fine and less prostrate pubescence. The anterior coxal cavities are closed. The tarsi are 5-jointed, but the fourth joint is small, and the third prolonged beneath, forming a membranous lobe.

The genus Diphyllus has but the tenth and eleventh joints of the antennæ enlarged, and has not yet occurred in our fauna. Diplocœlus has the club of the antennæ 3-jointed. *Marginus* Lec. has been united with Diplocœlus by Reitter, and in fact is not sufficiently distinct to be retained. Vide Horn, Proc. Amer. Phil. Soc. 1878, 606.

Fam. XXVIII.—**DERMESTIDAE.**

Mentum quadrate, usually corneous; ligula simple; palpi short, 3-jointed.

Maxillæ with the base exposed, with two lobes of variable form; palpi small, slender, 4-jointed.

Antennæ inserted in front of the eyes, usually 11-jointed, variable in Anthrenus, 9-jointed in Dearthrus, and 10-jointed in certain foreign genera, with the last three joints forming a large club.

Head small, deflexed; epistoma very short, coriaceous; labrum distinct; mandibles short; eyes rounded, front usually with a single ocellus or simple lens.

Prothorax short, with the side pieces not separate, sometimes excavated beneath for the reception of the antennæ; coxal cavities large, transverse, closed behind by the mesosternum, except in Byturus; prosternum prolonged behind, except in Dermestes and Byturus, and usually lobed in front.

Mesosternum prominent, rounded or subacute in front in Dermestes, emarginate in the others; side pieces attaining the coxæ.

Metasternum short, truncate in front; side pieces wide.

Elytra covering the abdomen, not striate; epipleuræ obsolete behind.

Abdomen with five free ventral segments.

Anterior coxæ conical, prominent, with small trochantin; middle coxæ oval, oblique, excavated externally, with large trochantin, usually distant; posterior slightly separated, transverse, not extending to the margin of the body (except in Orphilus), dilated into a plate partly protecting the thighs, which is, however, almost obsolete in Byturus.

Legs short, somewhat contractile; tibiæ with distinct spurs; tarsi 5-jointed, joints 1–4 short, usually equal, fifth longer; claws simple in the second sub-family, toothed in Byturidæ.

This family comprises small oval insects, some of which are found on dried animal remains, others only on plants. Several of them are very destructive to furs and objects of natural history.

The genera indicate two sub-families :—

Tarsi with second and third joints lobed beneath.	BYTURINÆ.
Tarsi simple.	DERMESTINÆ.

Sub-Family I.—BYTURINÆ.

This sub-family consists of a single genus, Byturus, represented by one species from the Atlantic district and one from the Pacific. It departs remarkably from the next sub-family by the mandibles having several teeth, by the tarsi having the second and third joints prolonged beneath into a membranous lobe, and the fourth joint small, and by the claws being armed with a large basal tooth; the plate of the hind coxæ is very feebly developed. The species are found on flowers. They are small, oval, brown, pubescent insects. The prosternum is not lobed in front, and the coxal cavities are narrowly closed behind, and not completed, as in the next sub-family, by the mesosternum.

The position of this genus is much disputed. Erichson placed it in Melyridæ, with which it seems to have but small affinity; DuVal places it in his family Telmatophilidæ, which is composed of heterogeneous elements, having no relation with each other; but by Redtenbacher and Lacordaire it is considered as belonging here, though the characters seem to us to warrant its being considered as a separate sub-family. Kiesenwetter places it with Nitidulidæ. Diodontolobus does not belong to the family; Dr. Horn states, after examination, that it belongs to the Peltinæ, and has since been described as *Micropeltis* Redt.

Sub-Family II.—DERMESTINÆ (genuini).

The tarsi are not lobed beneath, the fourth joint is scarcely smaller than the third, and the ungues are simple. The anterior coxal cavities are widely open behind, and are completed by the mesosternum, which is usually protuberant. The prosternum generally is lobed in front.

Frontal ocellus distinct. 2.
No frontal ocellus. **Dermestes.**
2. Mesosternum narrow; middle coxæ not widely separated, antennal fossæ wanting. 3.
 Mesosternum broad, divided or emarginate, receiving the tip of the prosternum: middle coxæ widely separated. 5.
 Mesosternum broad, entire, middle coxæ widely separated. 9.
3. Prosternum not lobed in front. 4.
 Prosternum lobed in front. **Perimegatoma.**
4. Antennæ 11-jointed; hind coxal plates narrow; mesosternum deeply emarginate. **Attagenus.**
 Antennæ 9-jointed; hind coxal plates wide; mesosternum narrowly divided. **Dearthrus.**
5. Mandibles and labrum not covered by prosternum. 6.
 Mandibles covered, labrum not covered by prosternum. 7.
6. Antennal fossæ wanting. **Acolpus.**
 Antennal fossæ distinct. **Trogoderma.**
7. Antennal fossæ under lateral margin of prothorax: body pubescent. 8.
 Antennal fossæ upon lateral margin of prothorax: body squamose. **Anthrenus.**

8. Antennal club of at least two joints. **Cryptorhopalum.**
Antennal club of one very large securiform joint set obliquely. **Axinocerus.**

9. Mouth covered by prosternum, which is truncate behind: hind coxæ not extending to the sides of the body: pubescence, long, erect. **Apsectus.**
Mouth covered by front legs: prosternum pointed behind; hind coxæ extending to the sides of the body: pubescence obsolete. **Orphilus.**

The number of joints of the antennæ is variable in Anthrenus. Apsectus has but one species, found in the Atlantic States; one specimen in my possession was hatched from a tumor on a stem of *Rhus radicans*. Dearthrus, Acolpus, and Axinocerus are each represented by single species in the Atlantic region. The other genera are represented on both sides of the continent. The antennæ of the males of certain species of Trogoderma are strongly serrate.*

FAM. XXIX.—**HISTERIDAE.**

Mentum corneous, sometimes large and covering the base of the maxillæ, flat or slightly concave, subquadrate, sometimes emarginate or tridentate in front; ligula almost concealed behind the mentum; palpi 3-jointed, cylindrical.

Maxillæ with two ciliated lobes, the internal one much smaller; palpi 4-jointed, cylindrical.

Antennæ geniculate, capable of being retracted, short, in the second sub-family with the first joint thick, but in the first with the first joint long, the eighth and following ones forming a compact, annulated, rounded, or (rarely) triangular club.

Prothorax closely applied to the elytra; side pieces not distinct;† in most of the genera with two cavities to receive the club of the antennæ; prosternum frequently lobed in front, produced behind, articulating with the mesosternum; coxal cavities open behind.

Mesosternum separating widely the middle coxæ; side pieces large, not divided, sometimes visible from above.

Metasternum very large, almost connate with the mesosternum anteriorly; episterna sometimes narrow, sometimes broad, occasionally curved; epimera broad, large, separated by a fine suture, which is sometimes effaced.

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* The table of genera has been contributed by Dr. Horace F. Jayne.

† In some species there is an elevated line, simulating a suture.

Elytra truncate behind, leaving two segments of the abdomen uncovered.

Abdomen with five free ventral segments, the first very large, the fifth very short, closely applied to the last dorsal segment, which is triangular and deflexed.

Anterior coxæ transverse and not prominent in the first sub-family, globose in the second; middle and posterior coxæ widely separated, not prominent, rounded, or rather subquadrate, the latter not extending to the sides of the body.

Legs short, retractile; tibiæ compressed, anterior ones usually toothed, posterior sometimes toothed; spurs distinct, those of the anterior pair very unequal. Tarsi slender, short, 5-jointed (except in Acritus, Aeletes, where the posterior ones are 4-jointed); claws (in all of our genera) two, simple; anterior tarsi usually received in grooves on the anterior face of the tibiæ.

A very well defined family of insects, moderately numerous, nearly all of a shining black color, with the elytra variously sculptured with striæ; some few species of Hister and Saprinus have the elytra marked with red, and a few of the latter genus are metallic in color. The form of body is variable; those of the first tribe are oblong and flat, with prominent mandibles; the others are round, oblong, oval, globose, or cylindrical, some depressed and some convex. The species live under bark of trees, in excrements, and in carcasses. When touched, the insects retract the antennæ and feet, appearing as if dead.

The metasternum is marked by two distant lines diverging posteriorly, and the first segment of the abdomen with two similar ones, recalling somewhat the sculpture of the same parts in Coccinellidæ.

The genera in this family appear to us to have been multiplied unnecessarily by later authors. We accordingly have made, when necessary, two tables, one of the genera as understood in the great monograph of Marseul, the other of those which appear to us to be entitled to real generic distinction.

This family may be divided, following the example of Lacordaire, into two very natural tribes, according to the position of the head in repose:—

Head porrected.	HOLOLEPTINI.
Head retracted, bent downwards.	HISTRINI.

Tribe I.—**HOLOLEPTINI.**

Body very much depressed above and below; head extended, with long, prominent mandibles; antennæ inserted under the sides of the front, the club not received in definite prosternal cavities; mentum emarginate, entirely covering the base of the maxillæ in our species; prosternum not lobed in front.

These species live under the bark of trees; some of them are found in California in decomposing stems of Cactaceæ.

The genus Hololepta, the only one within our territories, is distinguished by the mandibles not toothed, the pygidium small and perpendicular. It is divided into two by Marseul, according to the following characters:—

Prosternum not narrowed in front, mentum flat.	**Hololepta.**
Prosternum narrowed in front and rounded, mentum with an M-shaped elevated line.	**Lionota** (Lioderma).

If, however, these characters be considered as valid, then other genera must be established for Californian species. We prefer regarding them as one genus, in which are five groups:—

a. Mentum nearly flat; prosternum broad, flat. *H. fossularis*, &c.
b. Mentum flat; prosternum narrowed and rounded at tip. *H. Yucateca.*
c. Mentum concave, without elevated lines; prosternum slightly narrowed, truncate, and slightly emarginate at tip. *H. vicina.*
d. Mentum slightly concave, with fine lines; prosternum slightly narrowed, broadly rounded at tip. *H. platysma.*
e. Mentum concave, with strongly elevated lines; prosternum narrowed, almost acute at tip. *H. cacti.*

Tribe II.—**HISTRINI.**

Head retracted, deflexed; mandibles capable of being applied to the anterior edge of the prosternum, so as to conceal the mouth; mentum subquadrate, not covering the base of the maxillæ.

This tribe is again formed of two sub-tribes, which differ by the presence or absence of an anterior prosternal lobe; nevertheless, in our species of Tribalus, the lobe is so short and broad that they were considered by me as a distinct genus, Cærosternus, and placed in the second sub-tribe. Onthophilus is placed by Marseul and DuVal in the first, by Lacordaire in the second sub-tribe.

Prosternum lobed in front.	HISTRINI.
Prosternum truncate in front.	SAPRINI.

Sub-Tribe 1.—**Histrini** (genuini).

The genera of this sub-tribe live in excrements, or under the bark of trees; one genus (Hetærius) is found only in the nests of ants, early in spring. According to our views, modified by consulting the authors above mentioned, they may be thus arranged:—

A. Antennal cavities anterior, open in front, closed beneath more or less completely by the pectoral plate. 2.
2. Antennal club oval, pubescent, usually distinctly annulated. 3.
Antennal club obconical, solid, glabrous. 6.
3. Mandibles moderately prominent, labrum trapezoidal. 4.
Mandibles retracted, clasping the epistoma, labrum transverse. 5.
4. Antennal club broadly oval, distinctly annulated, elytra not acutely margined. **Hister.**
Antennal club elongate oval, apparently solid, but pubescent, elytra acutely margined. **Tribalister.**
5. Prosternum broad, lobe short; antennal club truncate. **Tribalus.**
Prosternum moderate, lobe distinct; antennal club rounded. **Epierus.**
6. Prosternal lobe normal; epistoma truncate. **Hetærius.**
Prosternal lobe broad, thin and deflexed; epistoma bifurcate. **Echinodes.**
B. Antennal cavities under the angle of the thorax, closed in front, open beneath.
Prosternum scarcely lobed in front; scape of antennæ moderate. **Onthophilus.**
Prosternum distinctly lobed; scape of antennæ as long as the funicle. **Peploglyptus.**
C. Antennal cavities at the middle of the inflexed portion of the thorax, near the sides.
Tibiæ all dilated, the anterior with large terminal spurs. **Dendrophilus.**
Middle and posterior tibiæ slender.
Anterior tibiæ dilated, with large terminal spur. **Paromalus.**
Anterior tibiæ feebly dilated, with small spur. **Anapleus.**

Hister, as above defined, contains several of the genera adopted by Marseul, which are separated in the following manner:—

Anterior tibiæ with the tarsal groove well defined; middle and posterior tibiæ subdentate.
  Prosternal lobe prominent.
    Anterior tibiæ toothed within near the base. **Cylistix.**
    Anterior tibiæ not toothed within. **Platysoma.**
  Prosternal lobe narrow, not prominent. **Omalodes.**

Anterior tibiæ with the tarsal groove badly defined; middle and posterior tibiæ spinulose.
  Mesosternum truncate or emarginate at apex.
    Posterior tibiæ broad at base and with a single row of spines. **Psiloscelis.**
    Posterior tibiæ narrow at base, biseriately spinulose.
      Elytra striate. **Hister.**
      Striæ replaced by flattened tubercles. **Margarinotus.**
  Mesosternum more or less produced in front. **Phelister.**

These divisions do not seem to have generic value, and their number might be increased by the separation of those species of Hister with striate prosternum.

Paromalus, as above defined, has been divided by Marseul into two:—

Elytra striate; body oval, subconvex. **Carcinops.**
Elytra not striate; body oblong, subdepressed. **Paromalus.**

As represented by the species in our fauna these two genera seem more worthy of adoption, inasmuch as the scutellum is distinctly visible between the elytra in the first, and not visible in the second.

Sub-Tribe 2.—**Saprini.**

Some of the genera of this sub-tribe live under bark and in excrements, also under stones; but the numerous species of Saprinus are found mostly in carcasses.

Our genera are the following:—

Antennæ inserted on the front; antennal cavities at the sides of the under surface of the prothorax; 2.
Antennæ inserted under the margin of the front; antennal cavities at the side of the prosternum. **Saprinus.**
2. Eyes finely granulated, not prominent; 3.
   Eyes coarsely granulated, convex; 5.
3. Prothorax without lateral groove: 4.
   Prothorax with deep lateral groove. **Plegaderus.**
4. Tibiæ toothed; pygidium convex. **Teretrius.**
   Tibiæ spinulose: pygidium double. **Teretriosoma.**
5. Hind tarsi 5-jointed. 6.
   Hind tarsi 4-jointed. 7.
6. Scutel visible. **Abræus.**
   Scutel invisible. **Bacanius.**
7. Scutel visible. **Acritus.**
   Scutel invisible. **Aeletes.**

Saprinus, Plegaderus, Teretrius, and Acritus occur on both sides of the continent; Abræus is represented by one species in California: the other genera have thus far been found only in the Atlantic region.

FAM. XXX.—**NITIDULIDAE.**

Mentum transverse, subquadrate, composed of two pieces closely united together, frequently rounded, sometimes sinuate or emarginate in front.

Maxillæ usually exposed, rarely covered at the base; usually with only one lobe, the outer lobe being wanting; but in the first tribe the outer lobe is distinct.

Antennæ inserted under the margin of the front, 11-jointed (the eleventh indistinct in Rhizophagus), terminated by a round or oval club, composed of three, rarely of two joints.

Prothorax sometimes closely applied to the elytra, sometimes passing over their base; prosternum frequently produced behind, side pieces not distinct; coxal cavities open or closed.

Mesosternum separating the middle coxæ, side pieces with the epimera large, extending to the coxæ.

Metasternum short, side pieces narrow, epimera not visible.

Elytra sometimes truncate, sometimes entire.

Abdomen with five free ventral segments, the first a little longer, widely produced between the posterior coxæ.

Anterior coxæ transverse, separated, not prominent; the middle and posterior transverse, flat, distant, the latter extending almost to the margin of the body.

Legs short, somewhat stout, retractile, or subretractile; tarsi short, dilated (except in some genera of the third tribe), hairy beneath, usually 5-jointed, with the fourth joint very small; the posterior tarsi of the males of Rhizophagus 4-jointed, in Cybocephalus all the tarsi 4-jointed, and in Smicrips 3-jointed.

The species of this family live on decomposing substances.

Antennæ 11-jointed, terminated by a 3-jointed club; tarsi isomerous, similar in the two sexes.
  Tarsi 5-jointed.
    Labrum free, more or less visible.
      Maxillæ with two lobes; antennæ feebly capitate. BRACHYPTERINI.

Maxillæ with one lobe; antennæ distinctly capitate.
Prothorax not margined at base; head horizontal.
Abdomen with two segments exposed. Carpophilini.
Abdomen covered or pygidium partly exposed. Nitidulini.
Prothorax margined at base, covering the base of elytra, head more or less deflexed. Cychramini.
Labrum connate with the epistoma. Ipini.
Tarsi 4-jointed; body contractile.
Thorax margined at base, covering the base of the elytra. Cybocephalini.
Tarsi 3-jointed; body elongate. Smicripini.
Antennæ 10-jointed, club 2-jointed; tarsi dissimilar in the sexes, heteromerous in the males. Rhizophagini.

Tribe I.—BRACHYPTERINI.

Antennæ eleven-jointed, terminated by a three-jointed (two in some *Cercus*) club, usually gradually formed and not of compact construction. Labrum distinct, usually small, often deeply emarginate. Maxillæ with two lobes. Anterior coxæ narrowly inclosed behind. Tarsi dilated. No antennal grooves are seen below the eyes, and by this character the genera may be distinguished from all of those of the next tribe which occur in our fauna.

The genera are:—

Claws distinctly toothed at base.
Elytra margined, epipleuræ distinct. **Brachypterus.**
Claws simple or very nearly so.
Elytra margined, epipleuræ distinct. **Cercus.**
Elytra not or extremely feebly margined, epipleuræ indistinct.
Form convex; terminal ♂ segment visible beneath only. **Amartus.**
Form depressed; terminal ♂ segment rather large, visible above. **Anthonæus.**

The males have a small apical dorsal segment. The species are found on flowers.

Tribe II.—CARPOPHILINI.

The species of this tribe are usually flattened, though some of the species of Carpophilus are moderately convex. Maxillæ with one lobe. Antennæ terminated by an abrupt three-jointed club, antennal grooves distinct. Tarsi dilated, but sometimes feebly. Two or three segments of abdomen visible beyond the elytra. The males have a small dorsal sixth segment. The ungues are simple. The species live some on flowers, some under bark.

Ventral segments 2–3 short, first, fourth, and fifth longer. **Carpophilus.**
Ventral segments 1–4 short, fifth as long as the others united. **Colastus.**
Ventral segments 1–2 short, 3–4 longer, fifth still longer.
Body depressed; fifth ventral elongate, but not conical. **Brachypeplus.**
Body elongate, fifth ventral long and conical. **Conotelus.**

The last genus has an elongate form, and resembles certain Staphylinidæ. *Tribrachys* Lec. must be united with Colastus.

Tribe III.—NITIDULINI.

Elliptical, usually depressed, and frequently widely margined species; sometimes moderately convex, and even (Pocadius) rounded. Distinguished from the preceding tribes by the elytra covering the entire abdomen, or leaving only the pygidium exposed, and from the next by the thorax not being movable over the base of the elytra. All of our genera have antennal grooves on the under surface of the head.

These insects live on flowers (Meligethes), in fungi (Pocadius), under bark and stones (Epuræa), or on dried animal matter.

Our genera are as follows:—

Prosternum depressed behind the coxæ, not prolonged. 2.
Prosternum elevated behind, often prolonged. 7.
2. Tarsi very distinctly dilated on all the feet. 3.
Tarsi not dilated or very feebly so. 4.
3. Antennal grooves strongly convergent.
Labrum bilobed. Males with a sixth dorsal segment. **Epuraea.**
Labrum feebly emarginate. Males without sixth segment. **Nitidula.**
Antennal grooves parallel, passing directly backwards. **Stelidota.**
4. Mentum broad, covering the base of the maxillæ. **Prometopia.**
Mentum not covering the maxillæ. 5.
5. Front not lobed over the antennæ.
Mandibles with tip slightly bifid. **Phenolia.**
Mandibles not bifid at tip. **Omosita.**
Front lobed over the insertion of the antennæ.
Mandibles simple at tip, toothed posteriorly. **Soronia.**
6. Mesosternum not carinate.
Head without antennal grooves.
Anterior tibiæ not toothed externally. **Thalycra.**
Anterior tibiæ bidentate at middle. **Perthalycra.**
Head with distinct antennal grooves.
Tarsi not dilated; body oval, pubescent. **Pocadius.**
Front tarsi dilated; body parallel and glabrous. **Orthopeplus.**
Mesosternum carinate; tarsi all dilated. **Meligethes.**

Lobiopa Er. has been united with Soronia Er.

Tribe IV.—CYCHRAMINI.

The species of this tribe are rounded or oval, convex insects, living in fungi. Maxillæ with one lobe. Labrum distinct. Thorax margined at base, covering the base of the elytra. Elytra covering the abdomen in great part, the pygidium is partly only exposed. Prosternum more or less prolonged at apex. Tarsi distinctly five-jointed.

Mesosternum protuberant in front, the middle coxæ widely separated.
  Prosternum prolonged, dilated, laminiform at tip, covering entirely the mesosternum; body glabrous, elytra striato-punctate. **Oxycnemus.**
  Prosternum less prolonged, feebly dilated at tip, not covering entirely the mesosternum; body pubescent, elytra irregularly punctate. **Amphicrossus.**
Mesosternum small, oblique, not protuberant.
  Metasternum protuberant, widely separating the middle coxæ; prosternum not prolonged at tip, not laminiform, vertical behind the anterior coxæ; body glabrous. **Cyllodes.**
  Metasternum not protuberant, middle coxæ narrowly separated.
    Hind tarsi longer than the others; body glabrous. **Pallodes.**
    Tarsi equal in length; body pubescent. **Cychramus.**

Psilopyga Lec. is the same as Oxycnemus Er.

Tribe V.—CYBOCEPHALINI.

Maxillæ with one lobe. Tarsi four-jointed. Body retractile, mandibles in repose resting against the metasternum. Thorax margined at base, covering the base of the elytra.

The views of DuVal in separating this genus from the *Cychramini* seem correct and worthy of adoption.

Tribe VI.—IPINI.

Maxillæ with one lobe. Labrum connate with the front, suture more or less distinct. Antennæ eleven-jointed, terminated by a three-jointed club. Anterior coxal cavities open behind, narrowly inclosed in *Pityophagus*.

Anterior coxal cavities open behind.
  Thorax margined at base, slightly overlapping the base of the elytra; body pubescent. **Cryptarcha.**
  Thorax not margined at base; body glabrous. **Ips.**
Anterior coxal cavities closed behind.
  Thorax not margined at base; body glabrous. **Pityophagus.**

Tribe VII.—**SMICRIPINI.**

Labrum moderately prominent. Maxillæ one-lobed. Mentum transverse concealing the maxillæ. Antennæ eleven-jointed with a three-jointed club. Tarsi three-jointed. Anterior coxal cavities open behind.

An aberrant tribe having a tendency towards Monotomidæ. But one species, *Smicrips palmicola* Lec. is found in Florida on Chamaerops palmetto, and was previously described by Reitter, Berlin Ent. Zeitschr. 1876, 301, as *Tisiphone hypocoproides* from Cuba, but the generic name is preoccupied.

Tribe VIII.—**RHIZOPHAGINI.**

Labrum visible at the tip of the epistoma but connate with it. Mandibles simple at tip. Maxillæ with two lobes, the outer slender not capitate. Antennæ ten-jointed, club of two joints, the tenth partly inclosed; antennal grooves short, convergent. Prosternum not prolonged at tip. Anterior coxal cavities closed behind. Mesosternum horizontal. Intercoxal process triangular, acute. Abdomen with the first and fifth segments long, the intermediate three short, equal. Elytra truncate, pygidium exposed. Tarsi feebly dilated, heteromerous in the males, pentamerous in the females. Claws simple.

The males in addition to the tarsal character have an additional segment and the head usually larger.

One genus, Rhizophagus, constitutes the tribe, and is represented on both sides of the continent; the species live under bark. This tribe is related to Trogositidæ, but the 1st tarsal joint is not shorter than the second.

Fam. XXXI.—TROGOSITIDAE.

Mentum transverse, subquadrate; ligula small, corneous.

Maxillæ with two lobes, the inner one sometimes very small; palpi short, 4-jointed.

Eyes usually reniform (divided in some foreign genera).

Antennæ inserted under the frontal margin, 11-jointed, rarely 10-jointed (in some foreign genera); the last three joints widened, forming a loose club, of varied form.

Prothorax not passing over the base of the elytra; side pieces not distinct; coxal cavities closed in the first and third sub-families, usually open behind in the second; prosternum separating the coxæ.

Mesosternum separating the coxæ, side pieces extending to the coxæ.

Metasternum emarginate behind, for junction with the first ventral segment; side pieces long, narrow; epimera not visible.

Elytra never truncate, always covering the abdomen.

Abdomen with five free ventral segments.

Anterior coxæ transverse, separated, and not prominent; middle and posterior ones transverse, flat, the former separated, the latter rarely contiguous.

Legs moderate; tarsi 5-jointed, not dilated; joints 1–4 with a brush of hair beneath; first joint very short, second usually slightly elongated, last joint very long; claws simple, with a broad but short bisetose onychium.

The insects of this family were classed by Erichson with Nitidulidæ, but, as very properly observed by Lacordaire, although the characters are mostly the same as in that family, the different plan of structure in the maxillæ and tarsi is sufficient to mark them as a distinct family.

The species live under bark; but some Tenebrioides are found in houses, living on grain, by the transportation of which they have been distributed over the entire globe.

Of the four recognized tribes of this family but two are found in our fauna.

Head relatively large, eyes not prominent; form elongate, margins not explanate. TROGOSITINI.
Head small, eyes prominent; form oval, margins explanate. PELTINI.

Tribe I.—TROGOSITINI.

Elongate insects, having the thorax narrowed posteriorly, and somewhat distant from the elytra; the epistome is trisinuate or emarginate in front; the last three joints of the antennæ form a loose club, usually dentate internally; they are 11-jointed, except in two foreign species of Nemosoma. The anterior coxæ are entirely inclosed.

Eyes rounded. **Nemosoma.**
Eyes transverse;
  Tibiæ spinous. **Alindria.**
  Tibiæ not spinous;
    Thorax truncate at apex, the lateral margin deflexed at middle. **Trogosita.**
    Thorax emarginate at apex, the lateral margin not deflexed. **Tenebrioides.**

Alindria is represented in the Atlantic region only, the other genera occur on both sides of the continent.

Tribe II.—PELTINI.

Oval, flattened, or rounded convex insects, having always a flattened margin; the front is truncate; the last three joints of the antennæ form a loose perfoliate club. The anterior coxal cavities are open behind, except in Calitys.

Mentum transverse, emarginate; antennal grooves feeble;
  Front tibiæ with terminal hook. **Peltis.**
  Front tibiæ without terminal hook;
    Front coxal cavities closed. **Calitys.**
    Front coxal cavities open behind. **Grynocharis.**
Mentum minute, oval; antennal grooves deep;
    Front coxal cavities open behind; front tibiæ without hook. **Thymalus.**

The species of the genera, except Thymalus, are flattened; the elytra are striate, with square punctures in the first; tuberculate in the second, with the sides of the body serrate; the last genus is convex, with the elytra irregularly punctured.

FAM. XXXII.—**MONOTOMIDAE.**

Mentum moderate, subquadrate, rounded or subangulated in front; ligula partly corneous, prominent; labial palpi short, 3-jointed, first joint very small.

Maxillæ exposed at the base, with two lobes, the outer one long, slender, scarcely ciliate at tip, the inner one larger, ciliate internally and at the tip; maxillary palpi 4-jointed, the first joint very short.

Eyes strongly granulated, rounded.

Antennæ inserted under the sides of the front, behind the mandibles, 10-jointed, the last one or two joints forming a club.

Head tolerably large, flat, suddenly but slightly constricted behind; front broadly lobed between the mandibles, which are short, acute, and fringed with membrane internally; labrum very short, not distinct; mandibles short, robust, acute at tip, with a small subapical tooth; internal margin fringed with hair.

Prothorax with the side pieces not separate, prosternum entire, coxal cavities small, broadly closed behind.

Mesosternum short, emarginate behind; side pieces large, diagonally divided; epimera attaining the coxæ.

Metasternum large, side pieces narrow.

Elytra truncate behind, leaving the last dorsal segment exposed.

Abdomen with five free ventral segments, the first and fifth elongated.

Coxæ, anterior small, rounded, separated; middle rounded, separated by the sternum; posterior transverse, separated.

Legs moderate; tibiæ nearly linear, with distinct terminal spurs, and a few small spines about the tip; tarsi 3-jointed, the joints 1–2 slightly dilated, and covered beneath with long hair, the fourth narrower and smaller, the last longer than the others united, with simple ungues.

Small, depressed insects, found mostly under bark of trees. They resemble closely in characters and appearance the tribe Rhizophagini of Nitidulidæ, and, like them, the males have a small terminal dorsal segment; the form of the anterior coxæ at once separates them from all Nitidulidæ.

The genera are :—

Head slightly prolonged behind the eyes, then suddenly constricted ; 2.
Head parallel behind the eyes, not at all constricted ; 5.
2. Intercoxal process of abdomen broad, feebly rounded in front ; 3.
Intercoxal process triangular, acute ; 4.
3. Terminal joint of antennæ suddenly broader, joint nine not wider than eight. **Monotoma.**
Last two joints enlarged ;
Ninth joint as wide as the tenth ; elytra irregularly punctured. **Phyconomus.**
Ninth joint not as wide as tenth ; elytra punctured in striæ. **Hesperobænus.**
4. Ninth joint as wide as tenth ; elytra punctured in striæ. **Europs.**
5. Last joint of antennæ suddenly enlarged, ninth not wider than eighth ; elytra punctured in striæ. **Bactridium.**

FAM. XXXIII.—**LATHRIDIIDAE.**

Mentum large, transverse; ligula indistinct; labial palpi short, with two or three joints; second joint large, rounded.

Maxillæ with two lobes; palpi 4-jointed, last joint large.

Antennæ inserted in front of the eyes in our genera, 9–11-jointed, the first and second joints thicker than the third, the outer ones enlarged.

Front with clypeal suture distinct; labrum short, covering the small, not prominent mandibles.

Prothorax with the side pieces not separate; prosternum more or less visible between the coxæ; coxal cavities entire; mesosternum separating the middle coxæ; metasternum moderate, side pieces narrow.

Elytra entirely covering the abdomen.

Abdomen with five free ventral segments, not remarkably differing in length.

Anterior coxæ conical, prominent, more or less separated; middle ones separate, rounded; posterior coxæ transverse, widely separated.

Legs moderate; tibiæ slender, without terminal spurs; tarsi 3-jointed, the third joint equal in length to the other two, with small simple claws.

Insects of very small size, found flying in twilight, and also under bark and stones; they are of graceful form, the elytra being usually wider than the thorax; the species of Bonvouloiria and most Lathridius are very remarkably sculptured, with elevated lines on the thorax.

The genus Monotoma, introduced into this family by many authors, does not belong to it, and will be found in the family Monotomidæ.

We have also excluded from the family *Corticaria trisignata* Mann., which, with *Cryptophagus maculatus* Mels., must form a new genus, Derodontus; its systematic place is in a new family.

Our genera are related as follows:—

Labial palpi 2-jointed; antennæ with outer joints gradually larger; 2.
Labial palpi 3-jointed; antennæ with abrupt 2-jointed club. **Holoparamecus.**
2. Antennæ with 11 distinct joints; prothorax narrow; 3.
Antennæ with outer joints confused;[*] prothorax wide. **Bonvouloiria.**
3. Antennæ of normal form. 4.
Antennæ slender, capillary, verticellate with long hairs. **Dasycerus.**
4. Prothorax strongly margined; 2d joint of tarsi not shorter than the 1st; 5.
Prothorax not, or very finely marged; 2d joint of tarsi shorter than the 1st. 7.
5. Front coxal cavities open behind; 6.
Front coxal cavities closed behind. **Stephostethus.**

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[*] Duval describes the antennæ of the European species as 9-jointed; those of the American species appear to have ten joints.

6. Antennæ with three enlarged joints.	**Lathridius.**
Antennæ with two enlarged joints.	**Coninomus.**
7. Tarsi simple.	**Corticaria.**
Tarsi with 1st joint large, oval patelliform.	**Monoedus.**

To Bonvouloiria belongs the California *Lathridius parviceps* Lec.* A species of Holoparamecus was found at Fort Yuma, California. The other genera are represented on both sides of the continent.

Fam. XXXIV.—**DERODONTIDAE.**

Mentum small, trapezoidal; ligula corneous, with distinct paraglossæ; labial palpi 3-jointed, with the last joint oval.

Maxillæ exposed at the base; inner lobe corneous, hooked at the end, and ciliate near the tip; outer lobe equal in size, ciliate at tip; maxillary palpi 4-jointed, cylindrical, last joint elongate-oval.

Head suddenly but not strongly constricted behind; eyes small, rounded, prominent, finely granulated; labrum transverse, rounded, separated from the front by a transverse membranous epistoma; mandibles short, curved, acute, with a tooth very near the apex.

Antennæ inserted before the eyes, upon the sides of the front, 11-jointed, first and second joints thicker than the following, 9–11 not suddenly somewhat larger.

Prothorax with the side pieces not separate, the margin strongly toothed in *Derodontus*, broadly flattened and reflexed in *Peltastica;* coxal cavities confluent, closed behind.

Mesosternum short, scarcely separating the middle coxæ; side pieces diagonally divided.

Metasternum large, side pieces narrow.

Elytra entirely covering the abdomen, with ten rows of large quadrate punctures, besides a marginal series and a short one near the scutellum.

Abdomen with five free equal ventral segments.

Coxæ, anterior, transverse, conical, prominent, contiguous; middle, oval, oblique, slightly prominent; posterior, transverse, slightly separated, dilated internally, forming a small plate, which protects the insertion of the thigh.

Legs moderate; tibiæ not dilated, with small terminal spurs; tarsi 5-jointed, clothed beneath with long hairs, the fourth joint somewhat smaller than the preceding; claws simple.

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* Proc. Acad. Nat. Sci., vii. 304.

This family contains Derodontus, represented by two species; *Cryptophagus maculatus* Mels., from the Atlantic district, and *Corticaria trisignata* Mann., from Russian America; and Peltastica Mann., from Alaska and Oregon.

Prothorax narrower than elytra, strongly toothed on the sides. **Derodontus.**

Body oval, margin broadly flattened and reflexed. **Peltastica.**

The form of the anterior and posterior coxæ distinguishes this from all the preceding families, and approximates it somewhat to the families following the Elateridæ.

The species of Derodontus are small, testaceous, or brown, coarsely punctured insects, having the head deeply impressed, with a small smooth tubercle each side inside of the eye, which at first sight resembles a large ocellus. The thorax is comparatively small, channelled, and its lateral margin is strongly toothed; the elytra are wider than the thorax, with striæ composed of large punctures, and are variegated with darker spots. Peltastica resembles in miniature Peltis; the color is pale, and the elytra are ornamented with several rows of polished dark spots.

FAM. XXXV.—BYRRHIDAE.

Mentum transverse (except in Nosodendron), corneous; ligula usually prominent, simple.

Maxillæ exposed at base, with two unarmed lobes.

Antennæ rarely 10-, usually 11-jointed, the outer joints forming an elongate club in most genera, nearly filiform in Amphicyrta.

Head prominent in Nosodendron, retracted in the other genera, with the parts of the mouth more or less protected by the prosternum; epistoma usually wanting, sometimes short, coriaceous, sometimes corneous; labrum distinct; mandibles short, not prominent.

Prothorax with the side pieces not separate; coxal cavities large, transverse, open behind, separated by the prosternum, which is short, truncate in front, slightly prolonged behind, fitting into the mesosternum.

Mesosternum small, prominent, emarginate, or excavated; side pieces largely attaining the coxæ.

Metasternum short, broad; side pieces narrow; epimera not visible.

Elytra covering the abdomen; epipleuræ obsolete behind.

Abdomen with five ventral segments, the anterior three subconnate in some genera.

Anterior coxæ transverse, not prominent, with large trochantin; middle coxæ flat, transverse, oval, with large trochantin; posterior coxæ subcontiguous, extending to the margin of the body, transverse, dilated into a plate partly protecting the hind thighs.

Legs short, stout, retractile; tibiæ dilated, usually sulcate externally for the reception of the tarsi; tibial spurs distinct; tarsi short, 5-jointed, the third joint frequently prolonged into a membranous lobe beneath, last joint nearly as long as the others united; claws simple.

This family comprises three sub-families, as follows:—

Antennæ inserted at the side of the head;	
Head prominent, mentum large.	NOSODENDRINÆ.
Head retracted, mentum small.	BYRRHINÆ.
Antennæ inserted on the front; head retracted.	CHELONARIINÆ.

Sub-Family I.—NOSODENDRINÆ.

But a single genus, Nosodendron, constitutes this sub-family. It is represented in Europe by one species, and in the Atlantic and Pacific regions, respectively, also by single species. It is sufficiently distinguished by the large, elongate, semi-elliptical mentum, entirely closing the mouth below, leaving only a very narrow portion of the maxillæ to fill the fissure on each side; the head is advanced; the antennæ 11-jointed, situated under the side of the head; the labrum is indistinct; the tarsi not lobed.

They are less than one-fourth of an inch long, oval, convex, black, densely punctured, and are found under bark of trees.

Sub-Family II.—BYRRHINÆ.

In this sub-family the head is retracted; the mentum small, quadrate; the base of the maxillæ largely exposed; the labrum distinct; the antennæ inserted under the sides of the head.

We would arrange these genera in three tribes:—

Epistoma short, coriaceous; antennæ 11-jointed.	AMPHICYRTINI.
Epistoma not distinct; antennæ clavate, 11-jointed.	BYRRHINI.
Epistoma corneous, separated by a fine suture; antennæ 10-jointed.	LIMNICHINI.

Tribe I.—**AMPHICYRTINI.**

These are distinguished by the front being finely margined, and broadly rounded anteriorly, leaving a short coriaceous epistoma, which serves as the base of the labrum. The labrum and mandibles are never concealed. The legs are scarcely contractile, and the antennæ are half the length of the body in Amphicyrta, a genus confined to the Pacific maritime slope. They are found under stones, and are very convex, ovate, smooth, black bronzed insects, very different in appearance from the other members of the family.

Antennæ nearly filiform; third tarsal joint lobed.	**Amphicyrta.**
Antennæ gradually but strongly clavate;	
Tarsi not retractile.	**Simplocaria.**
Anterior tarsi retractile (third joint of tarsi usually lobed).	**Pedilophorus.**

The tarsi of Amphicyrta are stated by Erichson to be not retractile; the posterior ones are in effect not retractile in *A. chrysomelina*, but very distinctly so in *A. dentipes*. Erichson has substituted the name Morychus for Pedilophorus, on the ground that the latter is not applicable to some of the species.

One species of Simplocaria, and one of Pedilophorus are found in New England and at Lake Superior; the other species are from the Pacific slope.

Tribe II.—**BYRRHINI** (genuini).

Oval or rounded, very convex, dull black or bronzed insects, covered with a fine, easily removed pubescence, forming varied patterns.

The head is strongly retracted, and the antennæ are always clavate; the labrum is distinct, and fits closely to the front, leaving no epistoma.

The species are found under stones; on the Pacific coast none have occurred south of Oregon.

Mandibles concealed by prosternum in repose, labrum visible;	
Anterior tarsi retractile.	**Cytilus.**
All the tarsi retractile.	**Byrrhus.**
Mandibles, eyes, and labrum concealed in repose.	**Syncalypta.**

The species of the last genus have on the upper surface long, clavate, upright bristles.

Tribe III.—**LIMNICHINI.**

Very small species, found on the margin of watercourses, where they burrow in the ground, and emerge when the water is thrown on the banks. A faint clypeal suture divides the front, but, owing to the dense punctuation, is frequently scarcely visible; the labrum is distinct; the antennæ, inserted at the sides of the front, are only 10-jointed, and the three outer joints form a club, almost solid in Physemus, feebly defined in Limnichus. The head is strongly retracted in both genera; the tarsi are free.

Eyes, labrum, and mandibles concealed in repose. **Limnichus.**
Eyes, labrum, and mandibles free; club of antennæ received in cavities at the anterior angles of the thorax, on the upper surface. **Bothriophorus.**

The second genus is represented by a very small species from southern California, described as *Physemus minutus* Lec.

Sub-Family III.—CHELONARIINÆ.

This sub-family is represented in our fauna by a single species of Chelonarium. The tropical species are found on leaves of plants. They are elongate, oval, moderately convex insects, with the thorax strongly margined on the sides and front; the head retracted flatly upon the breast, leaving, however, the eyes, mandibles, and labrum visible; the antennæ are inserted upon the front, closely approximated, 11-jointed, filiform; epistoma not separate from the front. Legs very contractile; tarsi with the third joint lobed; claws dilated at base. Epipleuræ very narrow, extending to the apex, grooved to fit the margin of the body.

It might perhaps be properly considered as a distinct family, but its affinities with the Byrrhidæ are none the less evident; though it is a transition form to the Helodini, below described.

Fam. XXXVI.—**GEORYSSIDAE.**

Mentum quadrate, corneous, moderately large; ligula coriaceous, slightly bilobed.

Maxillæ with two unarmed lobes.

Antennæ inserted under the sides of the front, near the eyes, 9-jointed, the first and second joints thick, the last three forming an oval club.

Head deflexed; labrum distinct; mandibles small; eyes rounded, lenses large.

Prothorax with the side pieces not distinct; prosternum not visible between the coxæ; flanks excavated for the reception of the antennæ.

Mesosternum short and wide, perpendicularly declivous in front.

Metasternum moderately large, side pieces very narrow.

Elytra entire, descending widely on the flanks; epipleural fold narrow, extending to the apex.

Abdomen with five free ventral segments.

Anterior coxæ prominent, flattened at tip, forming two small, subquadrate, contiguous plates, with a deep fissure between them, in which is concealed the prosternum; middle coxæ oval, distant; posterior transverse, not contiguous.

Legs short, slender; tarsi filiform, 4-jointed, the first joint longer than the following two; claws simple, small.

This family consists of but one genus, Georyssus; of it several species are found in Europe and Asia, and two in the United States; one on each side of the continent.

They are small, rounded, convex, roughly sculptured, black insects, found at the margin of streams, on wet sand; they cover themselves with a mass of mud, so that no part of the insect is visible.

FAM. XXXVII.—**PARNIDAE.**

Mentum corneous, trapezoidal, or emarginate in front; ligula large, not lobed.

Maxillæ exposed at the base, with two unarmed lobes.

Antennæ variable in form and position.

Head usually retractile; labrum distinct; mandibles small; eyes rounded.

Prothorax with the side pieces not separate; coxal cavities widely open behind, completed by the mesosternum, variable in form; prosternum prolonged behind the coxæ.

Mesosternum sometimes excavated, sometimes emarginate; side pieces attaining the coxæ.

Metasternum with side pieces wide or narrow; epimera (except in Psephenus) not visible.

Elytra entire; epipleuræ narrow, sometimes extending to the apex.

Abdomen with five, in Psephenus with six ♀ or seven ♂ ventral segments, the anterior ones connate.

Anterior coxæ transverse, with large trochantin, or rounded, without trochantin; middle coxæ oval, not contiguous; posterior coxæ transverse, dilated into a plate partly protecting the thighs, approximate in the first and second sub-families; distant and not forming a plate in Elmidæ.

Legs slender, usually long; tibiæ without distinct terminal spurs; tarsi 5-jointed, joints 1–4 short, equal, fifth longer than the others conjoined, large, with large simple claws.

A family containing three very distinct sub-families, and showing very diverse affinities not only with the preceding and following families, but also, by the form of the antennæ of various members, with the Gyrinidæ, and with some families of the Serricorn series, especially the Dascyllidæ; a more distant relationship with the Donacia tribe of the Chrysomelidæ, by the form of the tarsi of Hæmonia, has also been pointed out by Lacordaire.

Abdomen with more than five ventral segments; anterior coxæ with very large trochantin.	PSEPHENINÆ.
Abdomen with five ventral segments;	
Anterior coxæ transverse, with distinct trochantin.	PARNINÆ.
Anterior coxæ rounded, without trochantin.	ELMINÆ.

Sub-Family I.—PSEPHENINÆ.

The head is free, not retractile; the mouth inferior; the maxillary palpi very long, gradually dilated, the last joint securiform; the anterior part of the front is very prominent, and the upper face concave; the antennæ are inserted at the sides of the front, distant, longer than the head and thorax, serrate; the eyes are large, convex, finely granulated. The anterior coxæ are large and globular, the coxal cavities prolonged externally, showing a very large trochantin; the prosternum is carinate, and its posterior process is long and narrow; the mesosternum oblique, channelled: the side pieces of the metasternum are wide, and the epimera visible; the posterior coxæ dilated into a plate; the epipleuræ are narrow, and continue to the apex; the ♂ abdomen has seven ventral segments, the first and second connate, the fifth broadly emarginate, the sixth deeply bilobed, only visible around the emargination of the fifth, seventh rounded, entire, filling the emargination of the sixth; in the ♀ the sixth ventral segment of the ♂ disappears. The body is clothed with the same fine pubescence that characterizes the other sub-families, enabling a film of air to be preserved beneath the water.

One genus Psephenus *Lec.* represents this sub-family. Two species are known *P. Lecontei* Hald. from the Atlantic region and *P. Haldemani* Horn from Lower California.

The larva is an elliptical object, with the margins widely extended beyond the body, and is seen on stones under the water of rapid streams; it is especially abundant in the rapids of Niagara, and differs in no important particular from the larva of Helichus, of the next sub-family. It respires by branchial filaments.

Sub-Family II.—PARNINÆ.

The anterior coxæ are transverse, with a distinct trochantin; the posterior coxæ dilated into a plate; the abdomen has five ventral segments, the fifth rounded at the tip; the front is not prominent, as in Psephenidæ, and the oral organs are anterior; the palpi are short. The other characters are still variable, and will furnish occasion for the division into tribes.

Head not entirely retractile; prosternum not lobed in front; antennæ elongate, serrate, with the first and second joints not enlarged. LARINI.

Head retractile, protected by a prosternal lobe; antennæ short, first and second joints enlarged. PARNINI.

Tribe I.—LARINI.

The only representative known to us is *Lara avara* Lec., from California, an elongate, blackish insect, finely pubescent, with the elytra punctured in rows, impressed behind the base, and the thorax strongly narrowed in front, somewhat uneven; the antennæ are long and slender, distant from each other, and feebly subserrate, and not irregular or short; the clypeal suture is distinct; the head is not protected beneath by a lobe of the prosternum; the anterior coxæ are somewhat prominent, the trochantin large, free, and very distinct; the prosternal process is narrow; the mesosternum is prominent, deeply excavated; the middle coxæ are widely separated, and have distinct trochantin; the side pieces of the metathorax are narrow, the epimera slightly visible behind; the epipleuræ are narrow, and continue to the apex.

Tribe II.—PARNINI.

The head is capable of being retracted, and is then protected beneath by the prosternum, which is lobed in front; the antennæ are inserted on the front, distant and free at the margin of the eyes in Lutrochus, approximate and at the inner extremity of transverse grooves, and remote from the eyes, in the other two genera; they are short, 11-jointed, and more or less irregular in form. The anterior coxæ are not prominent, the trochantin small, connate with sternum; the prosternal process is wide; the mesosternum broad, emarginate, the middle coxæ with trochantin; the side pieces of the metathorax wide, with the epimera not visible, except in Lutrochus, where they are narrow, with small epimera. The epipleuræ are narrow, and variable in form; they are suddenly lobed in front, and extend to the apex in Lutrochus; they are not suddenly lobed, but extend to the apex, in Pelonomus; while in Helichus they are not lobed, and extend much less distinctly to the apex.

Body rounded; antennæ distant, club slender.	**Lutrochus.**
Body oblong, elongate;	
Antennæ slender, distant; prosternal lobe short.	**Throscinus.**
Antennæ approximate, club pectinate.	**Pelonomus.**
Antennæ distant, second joint much dilated, club lamellate.	**Helichus.**

Lutrochus luteus is found in Texas; *Pelonomus obscurus* in the Southern and Western States; *Throscinus Crotchii* Lec. in California; Helichus is widely distributed.

Sub-Family III.—ELMINÆ.

The anterior coxæ are rounded, without trochantin; the abdomen has five ventral segments, the fifth rounded at tip; the front is not prominent; the palpi are short; the antennæ inserted upon the front, near the eyes, slender, slightly thickened externally; middle coxæ widely distant; posterior coxæ separated, transverse, not dilated into a plate protecting the thighs; legs exceedingly long; side pieces of the metathorax narrow, epimera not visible; epipleuræ narrow, extending to the apex.

These insects are only found adhering to stones or plants beneath the surface of the water; the larvæ are similar in form to those of the other sub-families, except that the segments are not united to the margin, which thus appears incised.

Head protected beneath by a lobe of the prosternum;	
Antennæ 11-jointed;	
Anterior tibiæ pubescent internally.	**Elmis.**
Anterior tibiæ glabrous internally.	**Stenelmis.**
Antennæ 6-jointed.	**Macronychus.**
Head free; prosternum not lobed; antennæ 11-jointed.	**Ancyronyx.**

Ancyronyx occurs in the Atlantic region only; the other genera are represented on both sides of the continent.

FAM. XXXVIII.—**HETEROCERIDAE.**

Mentum large, oblong, deeply emarginate in front; ligula coriaceous, prominent, bilobed, without paraglossæ; palpi 3-jointed, moderately long.

Maxillæ exposed at the base, which is elongated; lobes two, coriaceous, not armed, but sparsely ciliate; palpi 4-jointed, short.

Antennæ inserted at the internal margin of the eyes, but in front, short, 11-jointed, joints 5–11 forming an oblong serrate club.

Head large; eyes rounded, finely granulated; front prominent; labrum large, rounded, ciliate over its whole surface; mandible stout, prominent, fringed internally with a ciliate membrane, and furnished externally with a strong carina.

Prothorax transverse, with rounded angles, side pieces not separate; prosternum lobed in front, acute behind; anterior coxal cavities widely open behind.

Mesosternum very short, deeply emarginate; side pieces small, diagonally divided.

Metasternum moderate, meeting the first ventral segment; side pieces wide.

Elytra entirely covering the abdomen.

Abdomen composed of five nearly equal ventral segments, the fifth only being movable, the others connate; the first marked each side with an elevated curved line reaching the posterior margin.*

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* This elevated line is finely striate transversely, and is a stridulating organ; the hind legs, by friction against it, produce a quite distinct sound.

Coxæ, anterior oval, transverse, with a distinct trochantin; middle ones rounded, angulated externally, separated by the anterior part of the metasternum; hind ones transverse, nearly contiguous.

Legs stout; tibiæ dilated, armed with rows of spines, and fitted for digging; tarsi 4-jointed, second and third joints shorter than the others, not lobed beneath, but fringed with long hairs; claws simple.

This family consists of but a single genus, Heterocerus; it is represented in every portion of our territory. The species are numerous, but are very similar in form and color, so that care is necessary in distinguishing them. They are oblong or subelongate, oval, densely clothed with short silky pubescence, very finely punctuate, and of a brown color, with the elytra usually variegated with undulated bands or spots of a yellow color. They live in galleries which they excavate in sand or mud at the margin of bodies of water, and, when disturbed, run from their galleries and take flight, after the manner of certain species of Bembidium.

FAM. XXXIX.—DASCYLLIDAE.

Mentum quadrate, corneous; ligula large, membranous, frequently divided into narrow lobes; palpi 3-jointed.

Maxillæ exposed at base, with two lobes, variable in form, but not armed with hooks, except in Eucinetus; palpi 4-jointed.

Antennæ distant, inserted immediately in front of the eyes, under a slight ridge, 11-jointed, more or less serrate, rarely pectinate or flabellate.

Head sometimes prominent, but usually deflexed, with the epistoma sometimes distinct from the front; mandibles not prominent.

Prothorax with the side pieces not separate; coxal cavities transverse, widely open behind; prosternum sometimes extending behind the coxæ, but usually not.

Mesosternum small, sometimes excavated, sometimes oblique and flat, frequently very narrow; coxal cavities transverse, excavated behind; epimera large, attaining the coxæ.

Metasternum moderate, side pieces tolerably wide; epimera usually visible.

Elytra covering the abdomen; epipleuræ extending to the apex.

Abdomen with five free segments, the fifth rounded at tip.

Anterior coxæ transverse, frequently prominent; in the first sub-family, with large trochantin, in the second without; middle coxæ smaller, sub-transverse, rarely with, usually without trochantin; posterior coxæ transverse, nearly contiguous, dilated into a plate partly covering the thighs.

Legs short, tibiæ slender, with small, and sometimes obsolete terminal spurs; tarsi 5-jointed, frequently with membranous lobes beneath; claws simple or pectinate; onychium (in some genera) very short, with two terminal bristles, sometimes wanting.

A family which, although of small size, contains genera widely differing in many of their characters; they all live on plants usually near water.

They naturally divide into two sub-families:—

Anterior coxæ with distinct trochantin. DASCYLLINÆ.
Anterior coxæ without trochantin. HELODINÆ.

Sub-Family I.—DASCYLLINÆ.

The anterior coxæ are transverse, rarely more prominent than the prosternal process which moderately separates them. The trochantin is large and very distinct. The mandibles are always more evident than in the second sub-family. The tibiæ are never bicarinate externally and the spurs comparatively small. The claws are simple or feebly dilated at base, pectinate in *Odontonyx*.

Three tribes are indicated by the genera in our fauna distinguished in the following manner:—

Antennæ distant at base, front not narrowed;
  Epistoma prolonged, concealing the labrum in great part and the mandibles, posterior coxæ narrowly separated. MACROPOGONINI.
  Epistoma short, labrum and mandibles visible, posterior coxæ contiguous. DASCYLLINI.
Antennæ approximate at base, front narrowed;
  Labrum visible, mandibles short, mouth inferior. BRACHYPSECTRINI.

The trochanters of the anterior and middle legs are elongate in the first tribe, short in the second and third.

Tribe I.—MACROPOGONINI.

Head free, slightly deflexed, received in the thorax as far as the eyes, clypeal suture obliterated, front slightly prolonged in great part concealing the labrum and mandibles in repose. Prosternum moderately separating the coxæ, usually meeting the mesosternum, the anterior coxæ oval, not more prominent than the prosternum and with large trochantin. Mesosternum separating the coxæ, horizontal or oblique (*Allopogon*). Metasternal epimera concealed. Posterior coxæ very narrow, with narrow plates, feebly dilated within, slightly separated at middle. Trochanters of anterior and middle legs moderately long. Fourth tarsal joint with two long narrow lobes, ungues simple. Onychium wanting.

This tribe differs from the Dascyllini which follow by the slightly prolonged epistoma concealing the labrum and mandibles, and by the slightly separated posterior coxæ.

The genera which occur in our fauna are as follows:—

Prosternum prolonged, meeting the mesosternum and limited on each side in front by an elevated line divergent anteriorly.
  Antennæ slender, elongate, joints 2–3–4 very short, together not longer than the fifth. **Macropogon.**
  Antennæ subserrate, joints 2–3 only short, together equal to the fourth. **Eurypogon.**
Prosternum not prolonged nor meeting the mesosternum, in front convex without raised lines.
  Antennæ serrate, second joint short, third a little longer and but little shorter than the fourth. **Allopogon.**

The genera of this tribe seem to have a certain relationship with the Eucneminæ through *Cerophytum.*

Tribe II.—DASCYLLINI.

The clypeal suture is sometimes visible, and sometimes behind the labrum may be seen a membranous epistoma. The prosternum does not articulate with the mesosternum; the plates of the hind coxæ are gradually dilated internally; the onychium is small, bisetose, and sometimes wanting. Trochanters of anterior and middle legs normal in size, not elongate.

The posterior coxæ are contiguous in *Dascyllus*, *Anorus*, and *Aræopus*, distinctly separated in *Anchytarsus*, and merely slightly contiguous in the others.

In geographical distribution *Odontonyx* and *Anchytarsus* are each represented by one species in the Atlantic region; the other genera are peculiar to the Pacific fauna, and have one species each, excepting *Dascyllus* with two.

The following table will enable the genera to be recognized:—

- Mandibles prominent, acutely margined above, rectangularly flexed at tip, head not retracted; thorax acutely margined;
  - Tarsi simple, slender. **Stenocolus.**
  - Tarsi lobed beneath;
    - Anterior coxæ separated by the prosternum, and but very little more prominent than it. **Dascyllus.**
    - Anterior coxæ prominent and contiguous. **Anorus.**
- Mandibles not prominent, arcuate at tip, not acutely margined above, head strongly deflexed; tarsi slender;
  - Claws pectinate; thorax acutely margined. **Odontonyx.**
  - Claws simple; thorax not acutely margined;
    - Antennæ slender, middle coxæ not more widely separated than the anterior, thorax obtusely margined, prosternum moderately long before the coxæ. **Anchytarsus.**
    - Antennæ serrate (pectinate ♂), moderately long, middle coxæ twice as widely separated as the anterior, margin of thorax very obtusely rounded, prosternum short in front of the coxæ. **Anchycteis.**
    - Antennæ serrate, very little longer than head and thorax, middle coxæ and thorax as in *Anchycteis*, prosternum short, vertical in front of the coxæ. **Aræopus.**

Of the above genera *Stenocolus* alone has an onychium. The anterior coxæ are moderately separated in the first two alone, the tip of the prosternum being also more prolonged. The first four genera have the thorax acutely margined; in the others the margin is either obtuse or very rounded. In *Anchytarsus* and *Anchycteis* the last joint of the maxillary palpi is triangular, in *Aræopus* moderately elongate, flattened and truncate.

Tribe III.—**BRACHYPSECTRINI.**

Front narrowed by the insertion of the antennæ and dilated beyond, clypeal suture not distinct; labrum small; mandibles short, not prominent. Antennæ serrate from the fifth joint. Anterior coxæ angulate externally, with distinct trochantin, separated by the prosternum which meets the divided mesosternum; middle coxæ oval; posterior coxæ narrow, with narrow plates. Tarsi slender, ungues simple.

This tribe is represented by Brachypsectra with one species *fulva* Lec., of yellowish testaceous color, finely pubescent, resembling a miniature Dascyllus, but of more depressed form. It occurs in Texas.

Through Brachypsectra a relationship is shown between the Dascyllini and the Eubriini of the next sub-family.

Sub-Family II.—HELODINÆ.

This sub-family contains a number of small species found on plants in moist situations, and readily recognized by the anterior and middle coxæ having no trochantin. They are divided into six tribes:—

Tarsi with the fourth joint very small, third lobed beneath. PTILODACTYLINI.
Tarsi with the fourth joint as large or larger than the third.
  Posterior coxæ very large. EUCINETINI.
  Posterior coxæ at most moderately dilated internally.
    Claws without membranous appendage.
      Front moderately broad, prosternum very short before and very narrow between the coxæ. HELODINI.
      Front narrowed by the insertion of the antennæ, prosternum distinct before and between the coxæ. EUBRIINI.
    Claws with membranous appendage arising from the base of each claw and as long as it.
      Front narrowed by the insertion of the antennæ. PLACONYCHINI.

In the above table the Ptilodactylini seem to lead very naturally from *Anchytarsus* of the preceding sub-family, resembling also in many points the tribe Chelonariini of the Byrrhidæ. The *Eubriini* and *Placonychini* have more than a resemblance to the Parnidæ, the anomalous *Psephenus* of that family affording a close link with the present. The last tribe by its appendiculate claws approaches in another direction the Melyridæ, but the affinities otherwise are not well marked.

Tribe I.—**PTILODACTYLINI.**

Represented in the Atlantic district by two species of Ptilodactyla; they are oval, brown, finely pubescent insects of convex form; the antennæ of the males have arising from the base of the joints 4–10 a slender cylindrical articulated appendage, equal in length to the joint itself; the clypeal suture is very distinct, and the front rises slightly above the epistoma; the labial palpi are normal in form. The prosternum is quite distinct before the coxæ, but not visible between them. The middle coxæ are not covered by the front coxæ, which are conical and prominent, and the hind coxal plates are suddenly dilated internally; the tibiæ are cylindrical, with long slender spurs; the tarsi are rather short, the second joint slightly, the third broadly lobed beneath, the fourth small, the fifth a little longer than the third, with the claws broadly toothed or appendiculate. Fifth ventral segment emarginate.

Tribe II.—**EUCINETINI.**

Eucinetus, a genus of wide distribution, composes this tribe; the mouth is prolonged; the head deflexed, without distinct clypeal suture; the prosternum is exceedingly short in front of the coxæ, which are long and conical; the middle coxæ are large and flat; the posterior ones are dilated into immense oblique plates, concealing the hind legs in repose; the metasternum is consequently short, and rhomboidal; the tibial spurs are distinct, the tarsi somewhat elongated, filiform, joints 1–4 decreasing in length; claws simple. Ventral segments six. The body is elongate-oval, convex, brown or black, pubescent.

The internal lobe of the maxillæ is armed with a terminal hook.

Tribe III.—**EUBRIINI.**

Head deflexed, front narrow, contracted by the insertion of the antennæ and prolonged into a slight beak. Mandibles entirely concealed. Maxillary palpi slender, elongated. Anterior coxæ transverse, without trochantin, separated by the prosternum and not more prominent than it except in *Acneus*. Middle coxæ more widely separated than the anterior, the mesosternum being more or less protuberant, either truncate or emarginate. The posterior coxæ are scarcely dilated internally. Tibiæ with minute terminal spurs, in two genera. Tarsi slender, slightly dilated in Dicranopselaphus, claws variable.

The species composing this tribe are of oval moderately robust form, with teguments of firmer consistence than in Helodes or Cyphon. Two of the genera agree in having the terminal joint of the palpi simple, without articulated appendages. In Eubria the last joint of both palpi is furnished with three short spines and in Dicranopselaphus with two.

The ungues of the genera of this tribe differ in the sexes. In the males the anterior claw of each tarsus is bifid at tip, the posterior simple; all have a broad tooth at base. In the females the claws are toothed at base (except in Acneus), simple at tip. Guérin describes the claws of Dicranopselaphus as tridentate from viewing the claws obliquely.

Acneus is further remarkable in having the antennæ of the male flabellate, the fourth joint having a short branch, joints 5–10 short with a very long slender branch, the last joint long and slender resembling the branches of the preceding joints.

The genera of this tribe are as follows:—

- Prosternum of moderate width not depressed between the coxæ; claws toothed at base; antennæ simple.
  - Tarsi slender, fourth joint smaller than the third and not prolonged beneath the fifth. **Ectopria.**
    - Tarsi slightly dilated, joints 2–3–4 feebly emarginate, the fourth slightly prolonged beneath the fifth. **Dicranopselaphus.**
- Prosternum narrow depressed between the coxæ; claws slightly broader at base ♀ or toothed ♂; antennæ ♂ flabellate. **Acneus.**

The first two genera have each one species in the Atlantic region, the third, one in California.

Tribe IV.—**HELODINI.**

Sometimes elongate, usually oval species, of varied color, covered with a very deciduous pubescence; the clypeal suture is not visible; the last joint of the labial palpi is frequently inserted at the side of the preceding joint, and not at the apex as in other insects. The thorax is usually very small; the prosternum in front of the coxæ is very short, and not visible between them. The anterior coxæ are long, oblique, and conical, and lap over a portion of the middle coxæ; the hind coxal plates are strongly dilated internally. Tibiæ sulcate externally, usually with small spurs, in Scirtes with longer ones. Tarsi with the fourth joint larger than the third, bilobed; claws simple. The antennæ of the male of *Prionocyphon discoideus* have the joints 4–10 furnished on each size with a cylindrical appendage longer than the joint. The fifth ventral segment is rounded at tip.

Our genera are separated in the following manner:—

- Third joint of the labial palpi arising from the side of the second.
  - Posterior femora normal, tibial spurs moderate.
    - First joint of antennæ expanded, posterior tarsi flat above and bicarinate. **Prionocyphon.**
    - First joint of antennæ not expanded.

Posterior tarsi convex above, not carinate, the third joint normally visible. **Microcara.**

Posterior tarsi flat and bicarinate above, the third joint in great part concealed by the prolongation of the upper edge of second joint. **Helodes.**

Posterior femora broad, saltatorial, the spurs of posterior tibiæ long. **Scirtes.**

Third joint of labial palpi arising from the end of the second. Tarsi convex above, not carinate. **Cyphon.**

In Helodes the hind coxæ are suddenly dilated internally, and in our species, the head is covered by the thorax, which is rounded in front; these species form *Sacodes* Lec., which has been suppressed. In Prionocyphon and Cyphon the hind coxæ are strongly but gradually dilated internally. Scirtes, Cyphon, and Helodes occur on both sides of the continent; the other two genera thus far only on the Atlantic slope.

Tribe V.—**PLACONYCHINI.**

Front narrow, antennæ closely inserted. Anterior coxæ without trochantin. Tarsi slender, claws with slender membranous lobes arising from the base.

In these few words a tribe is defined containing a single species possessing the oral organs of the Eubriini, a prosternum approaching the Helodini with a structure of tarsal claw entirely unique in the family.

This tribe contains but one genus Placonycha with the following characters:—

Head as in Ectopria. Eyes equal in the two sexes. Antennæ pectinate ♂, serrate ♀, very like Ectopria. Ligula with four processes, shorter and less slender than in that genus. Palpi similar to Ectopria. Prosternum short in front of the coxæ, prolonged narrowly between them and not elevated. Anterior coxæ moderately prominent, higher than the prosternum and without trochantin. Mesosternum of moderate width, depressed and oblique. Posterior coxæ suddenly but moderately dilated internally and contiguous, very narrow externally. Legs as in Ectopria. Tarsi slender, not lobed nor dilated, joints 1–4 gradually decreasing in length, fifth a little longer than the first and with a distinct bisetose onychium. Claws slender and simple at tip, moderately dilated at base, and with a slender membranous appendage arising from the base nearly as long as the claw.

This genus contains but one species, *P. Edwardsi* Lec., found in California. It is a small broadly oval depressed insect, with the sides of the thorax explanate, and the elytra vaguely sulcate. The elytra of the male are luteous, of the female piceous.

FAM. XL.—RHIPICERIDAE.

Mentum quadrate, corneous; ligula small, not prominent; palpi 3-jointed.

Maxillæ exposed at the base; usually with but one lobe; palpi 4-jointed.

Antennæ inserted before and inside of the eyes, under ridges, 11-jointed (in our genera), serrate in the females, frequently flabellate in the males.

Head prominent; eyes round; epistoma not distinct; labrum indistinct; mandibles large, stout and prominent in Sandalus, small in Zenoa.

Prothorax with the side pieces not separate; coxal cavities large, transverse, open behind; prosternum not prolonged.

Mesosternum short, oblique, flat; side pieces attaining the coxæ.

Metasternum short in Sandalus, moderate in Zenoa; side pieces wide in the first, narrow in the second; epimera large in Sandalus, not visible in Zenoa.

Elytra covering the abdomen; epipleuræ extending to the apex.

Abdomen with five (in our genera) free ventral segments.

Anterior and middle coxæ conical, prominent, the former with large trochantins; posterior coxæ transverse, dilated into a small plate partly covering the thighs.

Legs moderate, tibiæ with small terminal spurs; tarsi 5-jointed; claws simple; onychium long, hairy.

A family containing a small number of species, found on plants; Sandalus especially affecting various cedars; it is represented both in the Atlantic and Pacific districts; Zenoa contains but one species in the Atlantic district.

Tarsi not lobed; antennæ moderately long, serrate.	**Zenoa.**
Tarsi lobed; antennæ short (♀ serrate, ♂ flabellate).	**Sandalus.**

These two genera indicate different tribes, distinguished, as above stated, by the form of the side pieces of the metathorax.

Fam. XLI.—ELATERIDAE.

Mentum small, corneous, quadrate, sometimes rounded in front; ligula without paraglossæ; labial palpi 3-jointed.

Maxillæ exposed at the base, with two lobes, the outer one sometimes very small; palpi short, 4-jointed.

Antennæ inserted on the front in grooves, or under the margin of the front, 11-jointed, rarely 12-jointed, more or less serrate, sometimes flabellate or pectinate, the outer joints rarely in the first sub-family enlarged, forming a serrate club.

Head frequently retracted, sometimes advanced; usually applied to the prosternum beneath; mandibles usually small, sometimes slender and prominent, corneous; labrum distinct in most species, indistinct in the first sub-family.

Prothorax with the side pieces not separate; coxal cavities small, rounded, not closed behind by the mesosternum; prosternum long, usually lobed in front, prolonged behind, forming an acute process moving in the mesosternum.

Mesosternum short, excavated in the middle for the reception of the prosternal process; coxal cavities small, usually angulated externally; side pieces large, epimera reaching the coxæ.

Metasternum usually long, side pieces narrow, epimera slightly visible.

Elytra covering the abdomen (rarely abbreviated in the female); epipleuræ distinct, extending to the apex; scutellum visible.

Abdomen with five free ventral segments, fifth rounded at the apex (except in the female of Euthysanius), sixth visible in some of the tribe Plastocerini and in Cebrioninæ.

Anterior coxæ small, rounded, without trochantins, contained entirely in the prosternum, in cavities open behind; middle coxæ small, rounded or angulated externally, with a distinct trochantin,* except in the first and fifth sub-families; posterior coxæ transverse, oblique, contiguous, dilated into a plate covering in part or entirely the thighs (except in Cerophytum).

Legs short, sometimes contractile; tibiæ usually slender, with the spurs very small, or scarcely visible, moderately long in Cebrioninæ; tarsi 5-jointed, simple or lobed beneath; claws simple, toothed, or pectinated; onychium none, or very short and bisetose.

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* Lacordaire states that no trochantin is visible; but it is distinct in all the genera examined of genuine Elateridæ, and in no other except Perothops, in which it is merely rudimentary.

A very large family, and including the Eucneminæ and Cebrioninæ (regarded by many as distinct families), very sharply defined by the above characters. A few of the species of the first sub-family, and a majority of those of the second, possess the singular power of springing in the air when placed on the back. This is effected by extending the prothorax so as to bring the prosternal spine to the anterior part of the mesosternal cavity, then suddenly relaxing the muscles so that the spine descends violently into the cavity; the force given by this sudden movement causes the base of the elytra to strike the supporting surface, and by their elasticity the whole body is propelled upwards.

It is consequently obvious that the existence of this leaping power is dependent on a loose articulation between the pro- and mesothorax; and, in fact, this is a remarkable character in the majority of the genera of the family, though not apparent in most genera of the first sub-family.

All the species are vegetable feeders; and the larvæ live, some in the earth, others in rotten wood, others prey upon living plants.

Five sub-families may be defined, as follows:—

Posterior coxæ laminate; trochanters small.
  Labrum concealed; antennæ somewhat distant from the eyes, their insertion narrowing the front. EUCNEMINÆ.
  Labrum visible, free; antennæ arising near the eyes under the frontal margin. ELATERINÆ.
  Labrum transverse, connate with the front.
    Ventral segments six; ungues simple; tibial spurs well developed. CEBRIONINÆ.
    Ventral segments five; ungues serrate; tibial spurs moderate. PEROTHOPINÆ.
Posterior coxæ not laminate; trochanters of middle and posterior legs very long.
  Labrum short, transverse, connate with the clypeus; front gibbous; ungues serrate. CEROPHYTINÆ.

Sub-Family I.—EUCNEMINÆ.

The only characters separating this from the genuine Elaterinæ are found in the insertion of the antennæ upon the front, at the inner extremity of transverse grooves, before which the front is expanded again, and the labrum indistinct; the prosternum is nearly truncate in front, and the head is always deflexed, and applied to the sternum in repose.

The species are rare, and are found under bark, or on leaves of plants. Two tribes are indicated:—

Antennæ moderately distant; maxillary palpi with the last joint acute; prosternal sutures and margin parallel.	MELASINI.
Antennæ approximate; maxillary palpi with the last joint large, dilated; prosternal sutures and margin convergent.	EUCNEMINI.

Tribe I.—**MELASINI.**

Two genera, of slender form, both represented in our fauna, alone constitute this tribe. They differ in several respects from all other members of the family, and particularly by the large size of the head, so that the eyes are entirely disengaged from the thorax; the mouth is not perfectly applied to the prosternum, as in the next tribe; the prosternum is truncate in front, and its sutures are parallel, not running to the anterior angles of the thorax, as in the other genera of this sub-family; the middle coxæ are small, not angulated externally, and without trochantin; the epimera are very transverse.

Tibiæ broad, compressed.	**Melasis.**
Tibiæ slender.	**Tharops.**

Tribe II.—**EUCNEMINI.**

Several genera, usually cuneiform, sometimes subcylindrical, and easily recognized by the situation of the antennæ in approximate grooves, which narrow the clypeus. The middle coxæ are small, rounded, not angulated externally, and without trochantin; the epimera of the mesothorax are very transverse. Deltometopus possesses a feeble leaping power, which has not been observed in our other genera, although several of them probably may exhibit the same movement. The antennæ are frequently received in grooves, which run sometimes along the under side of the prothorax, sometimes along the prosternal suture; the latter position is assumed among our genera in Microrhagus, and in that the grooves are quite shallow. The claws have a broad tooth in certain species of Fornax.

The following table, an abbreviation of that given in the Monograph of de Bonvouloir, expresses the relation of our genera:—

Tarsi lamellate beneath on several joints. **Dendrocharis.**

Tarsi not lamellate. 2.

2. Posterior coxal plates narrower externally. 3.

Posterior coxal plates parallel or broader externally. 17.

3. Marginal groove of thorax beneath (for antennæ) well marked. 4.

Marginal groove absent. 8.

4. Prosternal sutures strongly arcuate. **Stethon.**

Prosternal sutures straight. 5.

5. Marginal groove of thorax straight, continuing directly on the head. 6.

Marginal groove more or less interrupted by the eyes. 7.

6. Marginal groove broad. **Deltometopus.**

Marginal groove narrow. **Dromaeolus.**

7. Tarsi simple. (Claws simple.) **Phænocerus.**

Tarsi with fourth joint emarginato-excavate. (Claws usually dentate.) **Fornax.**

8. Lateral margin of thorax with two ridges, sometimes a trace of a third. 9.

Lateral margin of thorax single. 11.

9. Prothorax with well-defined antennal grooves beneath. 10.

Prothorax without well-defined (and limited) grooves. **Adelothyreus.**

10. Antennæ with joints 2–3 united shorter than the fourth. **Entomophthalmus.**

Antennæ with joints 2–3 united much longer than the fourth. **Microrhagus.**

11. Mandibles stout, external face rugose and at base with a backward prolongation. 12.

Mandibles slender, not prolonged backwards. 13.

12. Last ventral segment rounded at tip. **Hypocœlus.**

Last ventral prolonged in a point. **Nematodes.**

13. Epistoma deeply sinuate each side. **Schizophilus.**

Epistoma regularly arcuate. 14.

14. Coxal plates suddenly narrowed from the inner third. 16.

Coxal plates gradually narrowed. 15.

15. Outer joints of antennæ shorter than the preceding. **Cryptostoma.**

Outer three joints suddenly longer. **Phlegon.**

16. Prosternal sutures arcuate. **Anelastes.**

Prosternal sutures straight. **Epiphanis.**

17. Antennæ slender, filiform.

  Third joint of antennæ not longer than second. **Xylobius.**

  Third joint much longer than second. **Hylochares.**

Antennæ dentate ♀ within or bi-pectinate ♂. **Sarpedon.**

Sub-Family II.—ELATERINÆ.

The antennæ in this sub-family are widely separated, inserted in small foveæ under the margin of the front, before the eyes. The mouth is usually anterior; the mandibles are small and retracted, except in the last tribe, in which, too, are found the only genera having the labrum connate with the front. The middle coxæ are always angulated externally, with a small, but distinct, trochantin, so that the episterna are not cut off from the coxal cavity. In a few genera of the last tribe the anterior and middle coxæ are conical. The tibiæ are slender in all the genera.

The tribes appear to be naturally arranged as follows:—

Antennæ received in deep prosternal grooves. AGRYPNINI.
Antennæ not received in prosternal grooves;
  Meso- and metasterna connate. CHALCOLEPIDIINI.
  Mesosternal suture distinct (side pieces of metathorax narrow in our tribes);
    First joint of antennæ very long. HEMIRHIPINI.
    First joint of antennæ moderate;
      Apex of mandibles obtuse or emarginate. ELATERINI.
      Mandibles with the tip slender, prolonged, acute. PLASTOCERINI.

Tribe I.—AGRYPNINI.

These insects are easily recognized by the antennæ received in grooves excavated along the prosternal sutures; the mandibles are emarginate at tip, or toothed; the front flat or concave; the mesosternum not, or but slightly, protuberant; the coxal plates are gradually, but slightly, dilated internally; the tarsi in our genera have the joints slightly inflated beneath, not furnished with membranous lobes; the prosternal lobe is large; the antennæ are serrate in our genera. The species are found under bark of dead trees.

Antennal grooves occupying the whole, or nearly the whole, of the prosternal suture;
  Third joint of the antennæ smaller than the fourth. **Agrypnus.**
  Third joint of the antennæ equal to the fourth. **Adelocera.**
Antennal grooves much abbreviated behind;
  Front tarsi received in grooves. **Lacon.**
  Front tarsal grooves wanting. **Meristhus.**

Of Agrypnus two species are found in Texas; Adelocera is found in our whole territory, and Lacon in the Southern States and Kansas.

Tribe II.—CHALCOLEPIDIINI.

The genus Chalcolepidius is represented by four species, one (*C. viridipilis*) found in the Atlantic States, two in Arizona, and one in southern California. They are very large insects, clothed with depressed scales; the mesosternum is protuberant, and entirely connate with the metasternum, the suture being obliterated. The antennæ are pectinate in the male of *C. viridipilis* and *smaragdinus*. The genus Alaus is known by two large velvety spots on the prothorax; it is commonly separated widely from Chalcolepidius, but the protuberant mesosternum, closely connected with the metasternum, with scarcely a trace of suture, indicates its affinity with that genus. The form of body, too, is not unlike. In both genera the coxal plates are gradually dilated inwards, and strongly toothed at the insertion of the thighs; the mandibles have the tip entire, but not prolonged; the front is concave, not margined behind the labrum, but deflexed; the tarsi are not lobed beneath, but very densely pubescent, and the claws are simple.

Scutellum obcordate; margin of elytra obsolete in front.	**Chalcolepidius.**
Scutellum oval; elytra strongly margined.	**Alaus.**

Tribe III.—HEMIRHIPINI.

In this tribe, represented only by *Hemirhipus fascicularis*, the front is concave, margined anteriorly; the mandibles are acute at the tip; the antennæ (flabellate and 12-jointed in Hemirhipus) have the first joint very long, and the others small and equal in size; the prosternal lobe is large, the sutures are concave outwards and double; the coxal plates are equally broad at the inner and outer portion, with a tooth at the origin of the thighs; the tarsi are not lobed beneath, but densely clothed with fine pubescence.

The species extends from New York to Brazil, is of large size, densely clothed with short brown pubescence; black, with the elytra muddy yellow, varied with small dusky spots.

Tribe IV.—ELATERINI.

This tribe comprises the great bulk of the species, and contains many genera differing in various peculiarities of structure, but all agreeing in having the antennæ not received in prosternal grooves, the mesosternal suture distinct, and the side pieces of the metathorax narrow. The mandibles are short, and never extend far beyond the labrum; they are usually emarginate, rarely subacute, but not much prolonged at the apex; in the latter case, however, the metasternum is not acute in front, as in the next tribe.

Sub-tribes may be defined as follows:—

Coxal plates suddenly dilated inwards.	ELATERINI.
Coxal plates gradually dilated inwards.	CORYMBITINI.

Sub-Tribe 1.—**Elaterini** (genuini).

No other character can be given to separate this sub-tribe from the next but the form of the plates of the hind coxæ, which are suddenly dilated about the middle, with the outer part much narrower than the inner; there is always a strong tooth at the insertion of the thighs; the front is margined anteriorly in all of our groups except the last; the prosternum is always lobed in front; the prosternal sutures are double, except in the first two groups, where they are entirely simple; the mandibles emarginate or toothed at the tip; the tarsi are variable in form, but the claws are never serrate.

The following groups are represented in our fauna:—

Margin of the front elevated behind the labrum;	
Prosternal spine truncate behind; scutellum cordiform.	CARDIOPHORI.
Prosternal spine acute; scutellum oval;	
Prosternum broad, sutures single, convex outwards.	CRYPTOHYPNI.
Prosternum moderate, sutures double, straight or concave;	
Third joint of tarsi lobed.	PHYSORHINI.
Fourth joint of tarsi lobed.	MONOCREPIDII.
Second and third joints of tarsi with long lobes.	DICREPIDII.
Tarsi not lobed beneath.	ELATERES.
Margin of the front not elevated.	LUDII.

Group I.—**Cardiophori.**

The species are usually small, and convex in form, remarkably distinguished by the prosternal spine being truncate behind, and fitting like a wedge into the mesosternum; the scutellum is cordiform; the front is margined, but not concave; the coxal plates are suddenly dilated inwards.

The genera known to occur in our fauna are separated as follows:—

Tarsi simple.	
Lateral marginal line becoming inferior	
Body winged, elytra free.	**Cardiophorus.**
Body apterous, elytra connate.	**Coptostethus.**
Lateral marginal line strictly lateral.	**Horistonotus.**
Tarsi with fourth joint lobed beneath.	**Esthesopus.**

Group II.—**Cryptohypni.**

This group contains only small species, and is easily known by the margined front, the suddenly dilated coxal plates, and the broad prosternum, with the sutures single, and convex outwards; the coxal plates are scarcely toothed at the insertion of the thighs; the tarsi are filiform.

Cryptohypnus is generally diffused; Œdostethus contains but one species from the Atlantic district.

Claws simple; tarsi moderate, clothed with stiff hairs.	**Cryptohypnus.**
Claws with a tooth at the middle; tarsi long, pubescent.	**Œdostethus.**

Group III.—**Physorhini.**

The small number of species constituting this group have the third joint of the tarsi furnished beneath with a membranous lobe, the fourth being small, and received upon the third. The front is very convex, its anterior margin rounded; the posterior coxal plates very narrow externally, suddenly dilated and strongly toothed internally; the claws are simple; the mesosternum always oblique; the prosternal sutures double, and excavated in front.

The genera of this group are not well defined, the characters separating them being derived from the form and size of the second and third joints of the antennæ. Anchastus alone occurs in our fauna; two genera have been separated from it, based on characters which have become evanescent by the discovery of other species.

Group IV.—**Monocrepidii.**

In this group the front is convex, margined in front; the first joint of the antennæ is longer than usual; the prosternal sutures are double, straight or concave, and scarcely excavated in front; the coxal plates are suddenly dilated internally, with the angle rounded, as in Drasterius, and a tooth at the origin of the thighs, the fourth joint of the tarsi is obliquely prolonged into a membranous lobe.

The genera Æolus and Heteroderes, adopted by Candeze, appear to be untenable, and heterogeneous; our species are therefore referred to Monocrepidius, removing to Drasterius those with simple tarsi, which were formerly included in the same genus.

Group V.—**Dicrepidii.**

The strongly margined front, the prosternal sutures, excavated in front, and concave outwards, and the tarsi with lobes beneath the second and third joints, will distinguish this group. The species are elongate, brown, hairy insects, with strongly serrate antennæ, sometimes even pectinate in the males. The coxal plates are strongly dilated inwards, and toothed. They are found in the Southern States and Texas, and belong to two genera:—

Mesosternum horizontal; anterior part of front with two crests, uniting above with the frontal margin. **Dicrepidius.**
Mesosternum oblique; front not crested. **Ischiodontus.**

To the latter genus belong *Elater soleatus* Say, and other species. Tricrepidius Motsch. is also an Ischiodontus, probably *I. ferreus.*

Group VI.—**Elateres.**

In this group are species having the front convex and margined; the thorax always narrowed in front; the prosternum not very wide, with the sutures distinctly double, and sometimes excavated in front, straight or concave outwards; the posterior coxal plates narrow externally, suddenly dilated internally, and toothed at the origin of the thighs; the tarsi not dilated or lobed (the anterior ones in Blauta very slightly so), and the claws entire. Our genera are:—

Prosternal sutures excavated in front;
  Joints 1–4 of the tarsi gradually increasing in length;
    Tarsi spongy beneath, the anterior one slightly lobed. **Blauta.**
    Tarsi ciliate beneath, entirely simple. **Elater.**
  First joint of the tarsi as long as the three following united;
    Second joint of antennæ very small, third large triangular. **Elatrinus.**
Prosternal sutures not excavated in front;
  Third joint of antennæ longer than the second. **Drasterius.**
  Second and third joints of antennæ small, equal. **Megapenthes.**

Drasterius is united by DuVal with Cryptohypnus, but the narrower prosternum, with double sutures, distinguishes it very strongly from that genus. Our species (*Elater dorsalis* Say, *El. elegans* Fabr., *M. amabilis* Lec., *M. comis* Lec., and *M. livens* Lec.) were included in Monocrepidius, but are distributed, with some new ones, by Candèze, between the genus now under consideration and Æolus.

The species of Megapenthes formerly placed in Elater have been very properly separated by Candèze. There is not an entire agreement between them in the form of the coxal plates. *El. limbalis* Herbst is also referred to this genus, though the coxal plates are much less suddenly dilated internally; hardly more so in fact than in *Corymbites æthiops*.

Group VII.—**Ludii.**

This group has the front convex, but not margined behind the labrum; the prosternal sutures concave outwards; the tarsi simple, pubescent beneath, and the posterior coxal plates less suddenly dilated internally, but still distinctly angulated at the middle of the hind margin, and strongly toothed at the insertion of the thighs. The species are usually of large, though one species, placed in Ludius, is of moderate size; it is the Oregon *L. tartareus* formerly included in Elater.

Our genera are two, thus distinguished, Crigmus Lec. having been united with Ludius.

Mesosternum declivous, not prominent.	**Ludius.**
Mesosternum protuberant.	**Orthostethus.**

To Orthostethus *Lac.* belongs *Aphanobius infuscatus* Germ., a large brown species found in the Southern States.

Sub-Tribe 2.—**Corymbitini.**

In this sub-tribe the coxal plates are gradually or sometimes scarcely dilated inwards, frequently not toothed over the insertion of the thighs, with the hind margin nearly rectilinear. In other characters there are found great differences between the groups; the prosternal sutures are frequently straight and simple, and the prosternal lobe is sometimes entirely wanting. The claws are pectinate in certain genera.

The following groups are represented in our fauna:—

Front convex; mouth inferior.	AGRIOTES.
Front flattened, margined; mouth anterior;	
Claws pectinate.	MELANOTI.
Claws simple.	ATHOI.

Front flattened, not margined; mouth anterior;	
Mesosternum declivous.	Corymbites.
Mesosternum protuberant.	Melanactes.

Group I.—**Agriotes.**

This group, composed of species of moderate or small size, is distinguished by the convex front, the edge of which is higher than the labrum; the mouth is situated on the inferior surface of the head, and is applied to the prosternum in repose; the latter is lobed in front; the sutures are double, either concave outwards or nearly straight, somewhat excavated in front; the antennæ are slender, scarcely serrate, and the first joint is a little longer than usual; the coxal plates are but slightly broader internally, although sometimes almost suddenly dilated; the tooth at the insertion of the thighs is large.

Our genera are:—

Front truncate, not margined behind the labrum, although higher than it; claws simple;	
Margin of prothorax deflexed in **front.**	**Agriotes.**
Margin of prothorax straight.	**Dolopius.**
Front margined;	
Claws and tarsi simple.	**Betarmon.**
Claws pectinate, tarsi slightly lobed.	**Glyphonyx.**

To Dolopius, as here defined, belong *D. macer* Lec., *lateralis* Esch., and *simplex* Motsch.; to Betarmon belongs only *Elater bigeminatus* Randall. The genus Sericosomus, placed by European authors near Dolopius, appears more nearly allied to Corymbites.

Group II.—**Melanoti.**

In this group are contained species of moderate or small size, having the front moderately convex, margined anteriorly; the mouth anterior; the antennæ serrate, with the first joint of the usual size; the prosternum is lobed in front; the sutures are double, and concave outwards; the coxal plates are gradually dilated inwards, and toothed at the origin of the thighs; the tarsi are not lobed beneath, and the claws are strongly pectinate.

Our species are numerous, and all belong to Melanotus.

Group III.—**Athoi.**

Here are to be placed all species having the front margined; the mouth anterior; the coxal plates narrow, gradually dilated inwards, scarcely toothed; the claws simple; and the prosternal sutures nearly straight, double, though rarely excavated in front; the first joint of the antennæ is moderate. The front is sometimes not only margined, but deeply concave, by the margin being reflexed; in some species of Limonius the margin is almost obsolete at the middle, establishing thus a transition to the group Corymbites; the prosternal lobe is sometimes obsolete, and the middle coxæ are in Campylus very approximate, so that the metasternum becomes acute in front. The tarsi have sometimes the second and third joints slightly lobed beneath.

The body is usually slender, and rarely (Pityobius) of large size.

Our genera are:—

Tarsi with the first joint scarcely longer than the second.	**Limonius.**
Tarsi with the first joint elongated;	
Prosternal lobe very short;	
Metasternum acute; antennæ 11-jointed.	**Campylus.**
Metasternum obtuse; antennæ 12-jointed.	**Pityobius.**
Prosternal lobe long.	**Athous.**

The males of Pityobius are remarkable for the antennæ having on each side a row of branches. Two species are known: *P. anguinus*, from the Atlantic States, of a dull black color, with short brown hair, ♂ with but single branches proceeding from beyond the middle of the joints of the antennæ 4–11 each side; and *P. Murrayi* Lec., from California, of a more shining black color, much less hairy, ♂ with one inner and two outer basal branches from the joints of the antennæ.

Group IV.—**Corymbites.**

This group is so closely connected with the last by intermediate forms, that its separation may be considered to be rather a matter of convenience than of natural difference; thus, the discussion of the question whether *Limonius vagus* and *estriatus* Lec., which belong to Paranomus, and *L. dubitans*, which forms Nothodes, should enter this or the preceding group, is a matter of but small consequence.

The front is not margined behind the labrum, and is usually slightly concave; the mouth is anterior, though somewhat deflexed in Sericosomus (which differs from the group Agriotes in this respect, as well as by the less convex front, and shorter first joint of the antennæ); the prosternum is either lobed or truncate in front; the sutures are double, not excavated in front, except in Bladus and Nothodes, usually nearly straight; the mesosternum is not protuberant, sometimes acute in front; the coxal plates are gradually dilated inwards, sometimes toothed at the insertion of the thighs.

Our genera are:—

Thorax without luminous vesicles;
  Tarsi filiform;
    Prosternum not lobed in front;
      Prosternal sutures straight; third joint of antennæ small. **Bladus.**
      Prosternal sutures concave outwards; third joint of antennæ equal to fourth. **Œstodes.**
    Prosternum with a short lobe; front suddenly deflexed at tip, but not margined at the middle;
      Elytra not striate; prosternal sutures not excavated. **Paranomus.**
      Elytra striate; prosternal sutures excavated in front. **Nothodes.**
    Prosternum with a long lobe;
      Front convex; coxal plates scarcely narrower externally. **Sericosomus.**
      Front usually more or less flattened; coxal plates narrow externally.
        Ungues simple. **Corymbites.**
        Ungues with a broad basal tooth. **Oxygonus.**
  Tarsi with the second and third joints lobed beneath. **Asaphes.**
Thorax with luminous vesicles. **Pyrophorus.**

The genus Corymbites contains a great number of species, and, as is usual in large genera, is quite polymorphous; some of the species (*C. æthiops* and *C. maurus*) have the coxal plates almost as suddenly dilated internally as in certain *Ludii* of the preceding sub-tribe. Some of the species are very narrow, resembling Athous and Campylus, others very stout. They may be divided into many groups, which are natural, but not entitled to rank as genera.

Group V.—**Melanactes.**

This group is represented in our fauna by the genus Melanactes alone, which, while confined to temperate North America, is diffused on both sides of the continent. The species are large shining black insects, found under stones. They are distinguished from other groups having the coxal plates gradually dilated inwards, by the horizontal protuberant mesosternum, which is not connate, as in Chalcolepidiini, but separated by a distinct suture from the metasternum. The front is depressed at the middle, and not margined; the mandibles are toothed near the tip; the prosternum is furnished with a long lobe in front; the sutures are double, nearly straight, slightly excavated in front; the coxal plates are gradually dilated inwards and toothed at the origin of the thighs; the tarsi are not lobed, but very densely pubescent beneath, with the joints 1–4 gradually decreasing in length; the claws are simple.

Tribe V.—**PLASTOCERINI.**

In this tribe are comprised certain genera which recede from the true Elaters to approach the Cebrioninæ; thus, the sixth ventral segment is usually slightly visible, and in the female of Euthysanius becomes equal to the other segments. The same sex is further remarkable for the elytra being very short, and the wings wanting; in the female of Aplastus the elytra are also abbreviated, but the wings are present.

The following characters distinguish this tribe: The mandibles are curved and slender at the tip, and project more than in other Elaterinæ; the labrum is more closely connected with the front; the prosternum is truncate in front, not at all lobed, and its lateral sutures are straight, slightly oblique, not excavated in front; the mesosternum declivous; the middle coxæ more conical and prominent than usual, nearly contiguous; the metasternum is very acute in front; the coxal plates are dilated inwards, but not suddenly, and differ slightly in form in the respective genera; they are toothed at the origin of the thighs. The tarsi are simple, and pubescent beneath; the claws are simple; the tibial spurs are more developed than in other tribes.

Two natural groups are obvious:—

Front margined; mandibles very prominent.	APHRICI.
Front depressed; mandibles not very prominent.	PLASTOCERI.

Group I.—**Aphrici.**

Aphricus californicus, a small species having the appearance of a slender Cardiophorus, is the only member of this group known. The mandibles are long and slender, and project so as to leave an open space between them and the front which is margined, and projects over the labrum; the antennæ are moderately serrate; the prosternum is very slightly lobed; the sutures are single, and not excavated; the middle coxæ are prominent; the metasternum is obtuse in front; the coxal plates are scarcely toothed at the insertion of the thighs; the first joint of the tarsi is not longer than the second; the sixth ventral segment is not visible.

Group II.—**Plastoceri.**

The mandibles are thick at the base, toothed at the middle, slender and curved at the tip, but embrace more or less closely the labrum, which is on the same plane with the depressed front, and closely connected with it, almost as in certain Cebrioninæ. The antennæ are long and serrate in Aplastus; in the other genera short, and pectinate with long branches in the males, in the females serrate, and slightly pectinate; the prosternum is slightly lobed in Aplastus, not at all lobed in the other genera; the sutures are double, slightly oblique, and not excavated; the middle coxæ are prominent, with the mesosternum acute in front; the coxal plates are gradually and sometimes strongly dilated inwards, and toothed at the origin of the thighs; the first joint of the tarsi is as long as the two following united; the sixth ventral segment projects beyond the fifth, which is round at the apex. In the female of Euthysanius, however, the elytra are short, the wings wanting, and the abdomen greatly elongated; the hind coxæ also become so prominent, as to leave the genuine first ventral segment (invisible in all other Elaterinæ) free; following this are the usual five equal to each other, then the sixth, equal to the fifth, but rounded at tip, and followed by a prominent obtusely triangular seventh (really the eighth) ventral segment; of these, all but the last two are margined behind with membrane.

Antennæ long, serrate, 11-jointed.	**Aplastus.**
Antennæ short, in the males pectinate;	
Antennæ 11-jointed.	**Plastocerus.**
Antennæ 12-jointed.	**Euthysanius.**

Sub-Family III.—CEBRIONINÆ.

Antennæ distant at base, inserted under a frontal margin. Mouth anterior; the labrum is transverse, connate with the front, the suture usually distinct, sometimes obliterated; mandibles slender, prominent, and long, meeting beyond the labrum; palpi moderately long. Anterior coxæ large, globose, without trochantin, middle coxæ rounded without trochantin, posterior coxæ transverse, dilated in a plate partly covering the thighs. Abdomen with six free ventral segments. Legs subfossorial, the anterior tibiæ somewhat dilated. Tibial spurs long, ungues simple.

A sub-family of small extent considered, until very recently, a distinct family. The differences formerly existing have gradually disappeared by the discovery of additional species until, at the present, very little remains to separate them from the Elaterinæ even to the extent admitted here.

The genera in our fauna are:—

Anterior tibiæ entire.	**Cebrio.**
Anterior tibiæ emarginate externally.	**Scaptolenus.**

Anachilus Lec., formerly included in the table, does not differ essentially from Cebrio.

Sub-Family IV.—PEROTHOPINÆ.

Antennæ not very closely approximated at base, arising under well-marked frontal ridges from small foveæ, at a distance in front of the eyes; mouth inferior; labrum transverse, arcuate anteriorly, closely united with the front; mandibles acute at tip slightly projecting beyond the labrum; palpi moderate, the last joint slightly dilated. Anterior coxæ small, globular, without trochantin, middle coxæ oval with a small trochantin; posterior coxæ transverse, the plate broadly dilated internally. Tibiæ slender, the spurs moderate in extent. Ungues serrate.

This sub-family contains but one genus, Perothops, which had for a long time been associated with the Eucneminæ. In the preceding edition of this work it formed with Cerophytum the sub-family Cerophytidæ. In his elaborate monograph of Eucnemidæ de Bonvouloir rejects it from association with that series. It seems to be a peculiar form intermediate between the Eucneminæ and Cebrioninæ, related to the latter series probably through *Musopsis* Chev.

Perothops contains but two species, *P. mucida* Gyll. from the Atlantic States and *P. Witticki* Lec. from California.

Sub-Family V.—CEROPHYTINÆ.

Antennæ approximate at base, arising each side of a frontal protuberance; mouth inferior; labrum short, transverse, closely united with the front; mandibles arcuate, acute at tip, not prominent. Anterior coxæ without trochantin, middle coxæ rounded, without trochantin, posterior coxæ flat, without free plate. Legs moderate, middle and posterior trochanters long, the last nearly as long as the femora. Tibial spurs small. Ungues pectinate at basal half, apex simple.

The genus Cerophytum forms this sub-family. It has been included by de Bonvouloir in the Eucnemidæ, while Lacordaire (Genera IV) considered it the type of a distinct family. There seems to be but little doubt, from the opinions of these and other authors, that Cerophytum is a very aberrant genus, too much so to be considered a true Eucnemine, but without differences of sufficient moment to be considered a family by itself. It seems to indicate a line of affinity between the Eucneminæ and the Dascyllidæ.

Two species of Cerophytum occur in our fauna, *C. pulsator* Hald. in the Atlantic region, *C. convexicolle* Lec. in California. They are very rare.

FAM. XLII.—**THROSCIDAE.**

Mentum small, narrowed in front; ligula membranous, not prominent; palpi short, 3-jointed.

Maxillæ exposed at the base, with two lobes, inner one very small; palpi 4-jointed.

Antennæ inserted on the front, received in grooves extending along the inferior margin of the prothoracic flanks, 11-jointed; sometimes serrate, sometimes with a loose serrate 3-jointed club.

Head immersed in the thorax to the eyes, which are elliptical; mouth inferior, applied to the prosternum; mandibles small; labrum prominent.

Prothorax with the side pieces not separate, deeply sulcate along the sternal suture, for the reception of the antennæ; coxal cavities small, open behind, being completed by the mesosternum; prosternum with an anterior rounded lobe protecting the mouth, prolonged behind into a flat process received in the mesosternum.

Mesosternum short, excavated in the middle for the prosternum, completing on each side the anterior coxal cavities; side pieces very transverse, attaining the coxæ.

Metasternum with the side pieces very narrow.

Elytra entirely covering the abdomen; epipleuræ distinct.

Abdomen with five ventral segments, not connate, though closely connected.

Anterior and middle coxæ small, rounded, not prominent, without trochantins, the anterior ones received in cavities formed by the pro- and mesosternum; posterior coxæ transverse, contiguous, dilated into a plate partly covering the thighs.

Legs short, contractile; tibiæ slender, with indistinct spurs; tarsi short, 5-jointed, joints 1–4 furnished beneath with long membranous lobes; claws simple, onychium none.

This family contains only a few small species belonging to three genera, representing different tribes; they are found on flowers, and have been classed with Eucneminæ by some recent authors, although the totally different construction of the anterior coxal cavities at once separates them. They do not possess the power of leaping, like most species of the preceding family, and the fixity of the prothorax on the trunk would show that any such act is mechanically impossible.

No tarsal grooves. Antennæ serrate, their cavities short, straight. **Drapetes.**
Tarsal grooves in metasternum. Antennæ with a 3-jointed club, cavities long, arcuate. **Throscus.**
Tarsal grooves in metasternum and abdomen. Antennæ slightly fusiform, cavities long, arcuate. **Pactopus.**

The name *Trixagus* Kugellann has priority over Throscus, but being applied to a genus composed of the one now under consideration and Byturus, it must be dropped for both. Pactopus *Lec.* is found in California: the other two genera occur on both sides of the continent.

Fam. XLIII.—BUPRESTIDAE.

Mentum moderate, subquadrate, or triangular, sometimes transverse, the anterior part in many genera membranous: ligula frequently not prominent; labial palpi short, 3-jointed.

Maxillæ exposed at the base, with ciliate, unarmed lobes; palpi short, 4-jointed.

Antennæ inserted upon the front, 11-jointed, serrate (flabellate in Xenorhipis ♂), the outer joints usually furnished with pores, which are diffused on the sides, or concentrated in a fovea on the inferior margin or at its extremity.

Head immersed in the thorax to the eyes, which are elliptical, and never emarginate; labrum small, prominent; mandibles short, stout.

Prothorax with the side pieces not separate from the upper piece; coxal cavities separated by the prosternum, widely open behind; prosternum prolonged behind, fitting into the mesosternum, or even the metasternum.

Mesosternum short, excavated, so that the visible part is frequently divided into two portions, which complete the anterior coxal cavities; side pieces large, diagonally divided; epimera narrowly attaining the coxæ.

Metasternum with the side pieces narrow; epimera visible.

Elytra covering the abdomen, or leaving only the pygidium exposed; epipleuræ narrow; wings large.

Abdomen with five ventral segments, the first and second connate, the others free; the fifth joint frequently emarginate in the males, leaving a small sixth joint visible.

Anterior coxæ separate, small, globular, received between the pro- and mesosternum, with the trochantin distinct; middle coxæ separate, globular, with the trochantin distinct; posterior coxæ transverse, usually nearly contiguous, concave behind, dilated into a plate partially covering the femora when retracted.

Legs short; tibiæ usually slender, with two small terminal spurs; tarsi 5-jointed, the first four joints with more or less developed membranous appendages beneath; onychium none.

The species of this family are, in general, elongate in form, and ornamented with metallic colors; the larvæ perforate the stems of living plants, and the perfect insects are found partly on flowers, partly sunning themselves on trees, during the hotter seasons of the year.

A monograph of the species belonging to our fauna has been published by Dr. LeConte in the Transactions of the American Philosophical Society, vol. XI, in which, with some modifications, the classification of Lacordaire was adopted; the characters of the groups have here been farther modified by the views of DuVal, and the divisions proposed are based upon renewed observations, though the groups themselves are scarcely different from those previously adopted.

The groups represented in our fauna form the following tribes:—

A. Hind coxæ with the plates distinctly dilated internally, cut off externally by the prolongation of the abdomen; their anterior margin straight, the hind margin oblique;
  Mesosternum divided;
    Metathoracic side pieces narrow; fourth tarsal joint not lobed. Buprestini.
    Metathoracic side pieces wide; fourth tarsal joint cleft. Schizopini.
  Mesosternum emarginate, not divided. Thrincopygini.
B. Hind coxæ with the plates scarcely dilated internally;
  Front not narrowed by the insertion of the antennæ; thorax truncate at base;
    Mesosternum emarginate; not divided. Julodini.
    Mesosternum scarcely visible. Mastogenini.
  ront narrowed by the insertion of the antennæ; thorax lobed at the base. Agrilini.

Tribe I.—BUPRESTINI.

The front is usually not contracted by the insertion of the antennæ, but in Chrysobothres is as much so as in the tribe Agrilini; the prosternum is sometimes obtusely, sometimes acutely angulated on the sides behind the coxæ, and its lateral sutures are oblique; the mesosternum is always divided, so that the cavity for the reception of the prosternum is formed both by the meso- and metasternum; the side pieces of the latter are always visible, and the epimera are triangular, with the hind margin sometimes straight, and applied to the coxæ, sometimes partly covered by the prolongation of the abdomen, which intervenes between the coxæ and the margin of the body. The hind coxæ are broader internally; their anterior margin is straight and transverse; the hind margin is oblique. The antennal pores are diffused on the sides of the joints in the first group, concentrated in marginal foveæ in the others. The species are more or less flattened in form.

Our groups are the following:—

Epimera of metathorax triangular, uncovered; prosternum obtusely angulated behind the coxæ;
  Mesosternum and metasternum closely united. Chalcophoræ.
  Mesosternal suture distinct. Buprestes.
Epimera of metathorax partly covered by abdomen; prosternum acutely angulated behind the coxæ;
  Front not contracted by insertion of antennæ. Anthaxiæ.
  Front contracted by insertion of antennæ. Chrysobothres.

Group I.—**Chalcophoræ.**

Insects of large size, readily known by the antennal pores being diffused on the sides of the joints, but sometimes only near the inferior margin, and by the mesosternal suture being indistinct.

Chalcophora is generally distributed through our territory, and some of the species are abundant in the Middle States; the other two genera are found in Texas, New Mexico, and Arizona. The male of Chalcophora has a distinct sixth ventral segment.

Antennæ inserted under a ridge; mentum rounded in front; posterior tarsi with the first joint elongated.	**Gyascutus.**
Antennæ inserted in small foveæ; mentum broadly emarginate in front; posterior tarsi with the first joint elongated.	**Chalcophora.**
Antennæ inserted in large foveæ; mentum broadly rounded in front; posterior tarsi with the first joint not elongated.	**Psiloptera.**

Group II.—**Buprestes.**

Species of moderate size and usually of elongate form; the antennal cavities are small, and the front is not lobed before the antennæ; the pores of the latter are placed in foveæ situated on the inferior margin of the joints, except in Cinyra, where they are terminal. The species of Dicerca and Pœcilonota are of a dull bronze color; some are abundant; they are remarkable for the tips of the elytra more or less prolonged, forming a kind of tail. Sexual characters vary in the different genera, and in the groups of species of each genus; they are found in the form of the anterior or middle tibiæ, in the outline of the tip of the fifth ventral segment. We have not observed a distinct external sixth segment in the male of any species. Dicerca, Poecilonata, and Buprestis are generally diffused; the other two genera belong to the Atlantic region.

Prosternum obtusely rounded behind;	
Mentum entirely corneous;	
Scutellum small, rounded;	
Tarsi broad, shorter than the tibiæ.	**Dicerca.**
Tarsi slender, as long as the tibiæ.	**Trachykele.**
Scutellum very transverse, truncate.	**Pœcilonota.**
Mentum membranous anteriorly.	**Buprestis.**
Prosternum acute at tip.	**Cinyra.**

Group III.—**Anthaxiæ.**

Species of small size, usually flattened, rarely linear; the prosternum is acutely angulated on the sides behind the coxæ, and acute at tip; the mesosternum is consequently narrowly divided; the suture separating it from the metasternum is distinct; the antennal pores are placed in foveæ at the extremity of the inferior margin of the joints; the front is not lobed before the antennæ.

Two genera, both diffused over our whole territory, and a third peculiar to the Atlantic region are found in our fauna:—

Mentum coriaceous in front; prothorax sinuate at base. **Melanophila.**
Mentum entirely corneous.
  Prothorax truncate at base; front not margined at sides; antennæ serrate in both sexes. **Anthaxia.**
  Prothorax sinuate at base; front slightly margined over the insertion of the antennæ which are flabellate ♂, serrate ♀. **Xenorhipis.**

The sculpture of Anthaxia is peculiar, consisting on the head and thorax of shallow punctures, with the intervening lines forming a fine network. Xenorhipis is remarkable from the structure of the male antennæ, which is probably unique in the family.

Group IV.—**Chrysobothres.**

This is the first of the groups in which the antennæ are inserted at the inner extremity of two short oblique grooves, by which the front is narrowed; before these grooves it again is widened, and the anterior margin is emarginate in an angular form, so as to produce a bilobed appearance. The mentum is corneous at base, membranous at apex; the prosternum is acutely angulated on the sides behind the coxæ, and is also acute at tip; the mesosternum is larger than usual, and only narrowly divided; the scutellum, small in all the preceding groups, is here large and acuminate; each elytron is rounded or subangulated at base, and enters the base of the thorax, which thus becomes lobed. The anterior femora in our species are strongly toothed; the membranous lobes of the first and second joints of the tarsi are obsolete.

The species are of a rather broad and usually flattened form, with the elytra impressed in the form of bands or spots, sometimes of a brilliant metallic color; the sexual differences are in the form of the anterior or middle tibiæ, and in the tip of the abdomen. The species of Chrysobothris are numerous, found in our entire territory, and many of them closely allied; Actenodes is found on the Atlantic slope, from New York to Texas. We have now but three species in our fauna; but as the genus is well represented in Mexico, other species may be expected to occur in Texas.*

Third joint of tarsi truncate; hind tarsi with the first joint elongated. **Chrysobothris.**

Third joint of tarsi much prolonged at the side; hind tarsi with the first and second joints equal; scutellum small. **Actenodes.**

Tribe II.—**SCHIZOPINI.**

This tribe consists of two genera of stout convex form, occurring in the Pacific district. It is easily distinguished by the very wide metathoracic side pieces, and the deeply bilobed fourth tarsal joint, which is cleft nearly to the base. The claws are armed with an acute tooth. In Dystaxia no sexual characters have been observed; in Schizopus the 5th ventral segment of the ♂ is broadly, and the 6th deeply emarginate.

Antennæ slender, nearly filiform.	DYSTAXIA.
Antennæ with joints 5–10 triangular.	SCHIZOPUS.

Tribe III.—**THRINCOPYGINI.**

This tribe contains but a single genus, Thrincopyge *Lec.*, with two species from New Mexico; the general form is elongate and depressed.

The front is not contracted by the insertion of the antennæ; the mandibles are short, thick, and obtuse; the mentum is entirely corneous; the antennal pores are situated in small marginal foveæ. The scutellum is distinct. The prosternum is broad, with the sutures oblique; the sides are not angulated behind the coxæ, and the tip is obtusely rounded, fitting into the emarginate mesosternum; the mesosternal suture is distinct. The hind coxæ are just as in the preceding tribe, dilated inwards, with the anterior margin straight, the posterior oblique; the epimera of the metathorax are triangular, not covered at all by the abdomen. The last ventral segment has a deep groove running around the sides and tip. The tarsi are broad; the ungues simple and distant.

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* Motschulsky (Bull. Mosc., 1859, II, 184) has described *Belionota californica*. The other species of the genus known inhabit the East Indies and Madagascar. It is distinguished from Actenodes by the scutellum being large, and the metasternum deeply emarginate.

Tribe IV.—JULODINI.

The species of this tribe are convex, and of a conical form, narrowed behind, rarely cylindrical or very elongated; nearly all are clothed with erect hair. The front is not contracted by the insertion of the antennæ; the mentum is entirely corneous; the antennal pores are diffused in the foreign genus Julodis, but contained in marginal foveæ in our genera. The thorax is truncate at base, and closely applied to the elytra. The prosternum is broad, with the sutures oblique; the sides are not angulated behind the coxæ, and the tip is obtusely rounded. The mesosternum is deeply emarginate, rarely divided; the mesosternal suture sometimes distinct, sometimes obsolete. The hind coxæ are narrow, not dilated internally; the anterior margin is straight or slightly concave, the hind one scarcely oblique; externally they are slightly wider than at the middle, and the usual prolongation of the abdomen, which limits them, is covered by the elytra. The epimera of the metathorax are triangular and small, but not covered by the abdomen. The first joint of the hind tarsi is elongated in our genera; the claws are either simple or toothed.

Our four genera belong to the group Acmæoderæ, and might be considered as types of as many sub-groups.

Hind coxæ with the anterior margin somewhat concave; side pieces of metathorax not covered; scutellum visible; claws simple **Polycesta.**
Hind coxæ with the anterior margin straight;
  Claws with a broad basal tooth;
    Scutellum indistinct; side pieces of metathorax partly visible. **Acmæodera.**
    Scutellum visible; side pieces of the metathorax covered by the elytra. **Ptosima.**
  Claws simple; scutellum visible; side pieces of metathorax visible. **Chrysophana.**

Polycesta and Acmæodera are found on both sides of the continent, Ptosima in the Atlantic States, and Chrysophana in Oregon; the last genus is entirely glabrous above, the others are clothed more or less densely with erect hairs.

Tribe V.—MASTOGENINI.

Mastogenius was founded by Solier upon a Chilian species: the genus was subsequently described by Dr. Le Conte as *Haplostethus*, and is represented in the Southern States by *M. subcyaneus*, one of the smallest Buprestides known.

The antennæ are inserted in cavities narrowing the front, which does not expand again anteriorly, as in the next tribe; the mouth is small, deflexed, but not applied to the prosternum; the mentum is entirely corneous. The prothorax is truncate at base, closely applied to the elytra. The prosternum is broad, truncate before and behind, with the lateral sutures parallel. The mesosternum is not visible; the metasternum is broadly truncate in front, and applied to the prosternum; the epimera of the metasternum are triangular, not covered by the abdomen. The hind coxæ are not dilated inwards, slightly broader outwards, and extend to the elytra; the anterior margin is slightly concave, the hind one not oblique. The legs are not contractile; the claws are broadly toothed. The form is cylindrical, and color bluish-black.

Tribe VI.—**AGRILINI.**

In this tribe the body is usually slender, sometimes, however, very broad and flat; in both cases it is narrowed behind. The species are found on leaves and flowers.

The front is strongly narrowed by the insertion of the antennæ, and is then expanded again, forming two diverging lobes; the anterior part of the head is vertical; the mouth inferior, and applied to the prosternum in repose; the mentum is large, triangular, and corneous. The prothorax is lobed at the base, receiving the convex bases of the elytra. The prosternum is broad in front, with oblique sutures, cuneate behind, and scarcely angulated behind the coxæ; the mesosternum is small, completely and frequently widely divided; the metathoracic epimera are small, and frequently not visible. The hind coxæ are but slightly dilated internally, narrowest at the middle, and broader externally, with the anterior margin more or less concave, and the hind margin not oblique. The legs are contractile, and the claws are strongly toothed, or even cleft, except in Taphrocerus, where they are connate at base, and simple.

Two groups exist in our fauna, as follows:—

Antennæ free.	**AGRILI.**
Antennæ received in grooves.	**BRACHES.**

Group I.—**Agrili.**

The body is always elongated; the prosternum is pointed behind; the anterior and middle coxæ are separated by about the same distance; the anterior margin of the hind coxæ is very distinctly concave, and the prolongation of the abdomen reaches, but does not extend along, the side pieces of the metathorax; there are no grooves on the under surface of the prothorax, for the reception of the antennæ; the tarsi are long or moderate; the scutellum is transverse and acuminate in our genera, which are but two in number: Agrilus is generally diffused; Eupristocerus is represented by but one species, *E. cogitans*, in the Atlantic States.

Hind tarsi with first joint scarcely elongated.	**Eupristocerus.**
Hind tarsi with first joint as long as the three following.	**Agrilus.**

Group II.—**Braches.**

The body is rarely elongated, usually broad and ovate; the middle coxæ are a little more distant than the anterior ones, and the mesosternum is very widely divided; the prosternum is very variable in form; the anterior margin of the hind coxæ is but slightly concave, and the prolongation of the abdomen extends a short distance along the side pieces of the metathorax; the sides of the prothorax beneath are deeply grooved near the margin, for the reception of the antennæ; the legs are very contractile, the tibiæ usually sulcate for the reception of the tarsi, which are very short; the scutellum is triangular.

	Tarsi much shorter than tibiæ.	2.
	Tarsi rather long, body very elongate.	**Rhaeboscelis.**
2.	Scutel small, tibiæ linear.	3.
	Scutel large.	4.
2.	Body elongate; prosternum pointed behind.	**Taphrocerus.**
	Body ovate; prosternum obtuse behind.	**Brachys.**
3.	Body triangular; prosternum very broad, almost truncate behind; tibiæ dilated.	**Pachyscelus.**

FAM. XLIV.—**LAMPYRIDAE.**

Mentum quadrate, moderate in size, frequently formed of two pieces separated by a transverse suture; ligula not corneous, prominent, without paraglossæ; palpi 3-jointed.

Maxillæ exposed at the base, with two ciliate lobes, the internal of which is sometimes obsolete; palpi 4-jointed.

Antennæ serrate, rarely pectinate or flabellate, usually 11-jointed, inserted on the front, more or less distant, according to the sub-family.

Head sometimes prominent, sometimes protected by the thorax; eyes rounded.

Prothorax with the side pieces not separate; coxal cavities large, transverse; prothoracic spiracle usually visible; prosternum very short.

Mesosternum triangular, not excavated; side pieces large, attaining the coxæ.

Metasternum with side pieces large; epimera visible.

Elytra never embracing strongly the sides of the abdomen, sometimes short, sometimes (in the female of foreign genera) entirely wanting.

Abdomen with seven or eight free ventral segments.

Anterior coxæ contiguous, conical, with large trochantin; middle coxæ oblique, contiguous (except in Lycini), conical, with or without trochantin; posterior coxæ transverse, prominent, internally forming a conical protuberance.

Legs slender, or compressed, long or moderate; trochanter in the axis of the thigh; tibiæ with short or indistinct terminal spurs; tarsi 5-jointed, not lobed beneath, uniformly pubescent in the first, spongy pubescent in the second and third sub-family, fourth joint more or less bilobed; claws variable in form.

Insects of moderate, or small size, of elongate form, and soft consistence, found on plants. Many of the species of the second ~~tribe of the first~~ sub-family possess the remarkable power of emitting light, and are hence called fireflies.

The species may be naturally divided into three sub-families of equal value, as follows:—

Middle coxæ contiguous; epipleuræ distinct. 2.
Middle coxæ distant; epipleuræ wanting. LYCINÆ.
2. Episterna of metathorax sinuate on inner side; epipleuræ usually wide at the base. LAMPYRINÆ.
Episterna of metathorax not sinuate on inner side; epipleuræ narrow at the base. TELEPHORINÆ.

Sub-Family I.—LYCINÆ.

The species of this sub-family are diurnal in habits and are found on the leaves of plants, where they seek their insect food.

They are known by the middle coxæ being rather widely separated by the mesosternum, and by the epipleuræ being reduced to a narrow thickened marginal line. Besides these essential characters of definition, other characters are seen in these insects not found in the other sub-families.

The elytra are frequently costate, and coarsely reticulate with fine elevated lines forming a coarse network, or more usually a regularly goffered surface. The head is sometimes prolonged in front of the eyes into a long narrow beak, which in other species becomes broad and short and in many of the species entirely disappears. The mandibles are feeble, slender, and acute, the palpi are unequal and the eyes larger in the ♂ than ♀, though never very large; they are widely separated above and beneath. The antennæ are eleven-jointed, but the second joint is sometimes very short and inconspicuous; they are frequently very broad and compressed, and the joints 3–10 occasionally emit broad branches, more slender and longer in the ♂ than in the ♀; frequently too, they are only slightly compressed and subserrate; in this case the second joint is very distinct and one-half as long as the third. The sexual characters are simple; the ventral segments are seven in the ♀, the seventh being large and slightly nicked at the tip; they are eight in the ♂, the seventh being broadly and strongly emarginate, and the eighth elongate-oval, moderate in size and prominent. There are slight differences in the form of the last two segments of ♂ in our species, but as they are readily recognized by other characters we have not deemed it prudent to encumber the tables with minutiæ of such small import which would probably tend to confuse the student.

The genera represented in our fauna may be divided into three natural groups: the first is typical and peculiar, the second tends to the Lampyrinæ, and the third to the Telephorinæ.

	Prothoracic spiracle not prominent.	2.
	Prothoracic spiracle with tubular chitinous peritreme, very prominent in the usual position of the epimeron, behind and at the outer extremity of the front coxæ (except in *Cænia*).	LYCI.
2.	Elytra costate, cancellate or reticulate.	EROTES.
	Elytra substriate, not costate or cancellate.	LYGISTOPTERI.

Group I.—**Lyci.**

	Front prolonged, beak more or less distinct, mouth anterior.	2.
	Front gibbous between the antennæ, mouth deflexed, inferior, beak wanting.	4.
2.	Beak long.	3.
	Beak short.	**Rhyncheros.**
3.	Antennæ with third joint as long as fourth and fifth.	**Lycus.**
	Antennæ with third joint scarcely longer than fourth.	**Lycostomus.**
4.	Antennæ much compressed.	**Calopteron.**
	Antennæ pectinate; spiracle prominent.	**Celetes.**
	Antennæ pectinate; spiracle not prominent.	**Cænia.**

Group II.—**Erotes.**

In this group the front is short, gibbous, sometimes transversely margined, the beak is wanting and the mouth deflexed; the last joint of the maxillary palpi is longer than the preceding, acute at tip.

The antennæ are moderately compressed, with the second joint usually at least one-half as long as the third, which is not longer than the fourth. Prothorax carinate, divided into cells or feebly channelled; spiracle, not tubular, depressed. Elytra reticulate, costate, and cancellate, or with ribs scarcely elevated and interstices with single small quadrate depressions, never widely dilated behind. Front coxæ rather narrowly separated.

Prothorax strongly carinate, sides divided by an oblique ridge from the hind angles. **Lopheros.**
Prothorax many celled, sides divided by a strong transverse ridge. **Eros.**
Prothorax not carinate, feebly channelled behind, sides not divided by transverse ridge. **Plateros.**

Group III.—**Lygistopteri.**

The insects of this group, of which two genera are represented in our fauna, are easily distinguished by the pubescent velvety surface, and the feebly striate, not reticulated elytra. The head is prolonged into a long or short broad beak, which latter form is rather a muzzle, like that of many *Podabri;* the eyes are moderate and the front broad; the antennæ are rather widely separated, subserrate, with the joints thicker and less compressed than in the other two groups; the second joint is one-half as long as third, which is shorter than fourth. Maxillary palpi with last joint subtriangular, apical side oblique. Prothorax channelled, margins usually thickened, reflexed, with an oblique ridge running forwards towards the median groove; the thickened side of the prothorax is usually foveate at the middle of its length, thus recalling *Polemius* of the Telephoridæ, as the form of the muzzle does *Podabrus*.

Beak long, narrowed at tip; prothoracic channel forming a rhombic cell, the sides of which connect with the oblique ridge, sides not thickened; maxillary palpi with distal side of last joint curved. **Lygistopterus.**
Beak short, broad; prothorax with thickened sides, oblique ridges short; maxillary palpi with distal side of last joint oblique. **Calochromus.**

Sub-Family II.—LAMPYRINÆ.

The species of this sub-family are easily separated from the Lycidæ by the middle coxæ being contiguous, and the epipleuræ wide at the base of the elytra, even when the latter as in some ♀ ♀ are very short.

From the Telephoridæ they are known by the metathoracic episterna being sinuate on the inner margin, a character first observed by DuVal, and which seems to have much value in apportioning the more difficult forms to their respective groups.

The genera examined seem to indicate two tribes; the first is numerous on both continents, especially in the tropical regions; the second is perhaps exclusively American, unless it can be united with Drilini.

Head more or less covered, antennæ approximate or moderately distant; metathoracic epimera long. LAMPYRINI.

Head exposed, antennæ distant; metathoracic epimera wide. PHENGODINI.

Tribe I.—**LAMPYRINI.**

The most characteristic structure in these insects is the light-giving apparatus which is contained in the posterior abdominal segments of most of the species, though it is quite absent in some genera.

The position and form of the organs differ according to genus and in a less degree according to species.

In most of the genera the sexes are similar in appearance, but in the Lampyres group the ♀ are larger than ♂ and larviform, with short elytra and no wings. In these genera the eyes of the ♂ have their maximum, and those of the ♀ the minimum development. In the other groups the eyes of the ♂, though larger than those of ♀, are not remarkable or disproportionate in size. The head is deeply immersed in the prothorax which is foliate at the sides and apex, so as to protect the head.

The antennæ are approximate or moderately separated, and vary in form according to group and genus. Our genera seem to indicate the following groups:—

Antennæ with second joint small, usually transverse, head completely covered by prothorax.

Antennæ pectinate, rather distant, last joint simple. MATHETEI.

Antennæ not pectinate (in our genera), approximate, last joint elongate, simple. PHOTINI.

Antennæ with last joint appendiculate, having a small acicular appendage.	LAMPYRES.
Antennæ with second joint not transverse; head exserted, narrowed behind the eyes.	LUCIOLÆ.

Group I.—**Mathetei.**

In this group the front is wide, the antennæ moderately separated at the base, eleven-jointed, pectinate or bipectinate, with the last joint elongate, sinuate, and pointed at tip. The eyes are not very large, lateral, convex, widely separated above and beneath.

The prothorax is less prolonged over the head than in the next two groups; the elytra are similar in both sexes and the inflexed epipleuræ are wide near the base, the extreme margin being reflexed and elevated as far as the length of the metasternum; this fold is parallel with the side margin in *Matheteus*, but runs obliquely towards the latter in *Polyclasis*.

Margins expanded, flattened; antennæ pectinate.	**Matheteus.**
Margins not flattened; antennæ bipectinate.	**Polyclasis.**

Group II.—**Photini.**

In this group the antennæ are more or less compressed, sometimes serrate; the last joint is elongate and rounded at tip, without appendages or sinuation; the second joint is short, sometimes very short and transverse (*Lucidota*). The sexes are similar in appearance, except in one species of *Photinus*, where the elytra of the ♀ are short and the wings wanting. The eyes are larger in ♂ than ♀, but are separated by a wide space both above and beneath in all the species. In the ♂ the last ventral segment is small and narrow, covered by the scutate last dorsal, which varies in form according to genus and species. The light organs, when present, are more developed in ♂ than ♀, which is the reverse of what obtains in the group Lampyres. The head is always covered by the hood-like prothorax. The epipleuræ of the elytra are wide at the base; the inferior (or distal) margin is reflexed, and converges more or less to the lateral margin of the elytra. The elytra vary in color; in the species without well-developed light organs they are black, with the single exception of *Pyropyga indicta*, where they are brown margined with testaceous, as in the brilliantly luminous species.

It will therefore be especially necessary for the inexperienced student to ascertain in this group, to what genus his specimen should be referred, before he attempts its specific determination.

There are in many families of Coleoptera strong resemblances between species of different genera, but there are none (with the exception of certain Rhynchophora), so deceptive as those which our own limited fauna presents to us in this group of Lampyridæ.

Eyes small; light organs feeble; ventral segments without stigma-like pores. 2.

Eyes large, but larger in ♂ than ♀; light organs well developed; ♂ with strongly marked stigma-like ventral pores. 5.

2. Antennæ with second joint one-half as long as third or nearly so. 3.

Antennæ very much compressed, not serrate, second joint very short, transverse. **Lucidota.**

3. Antennæ not serrate, narrow, compressed. 4.

Antennæ strongly serrate (♂ ♀), prothorax subcarinate, dorsal segments strongly lobed, ♂ last dorsal broadly emarginate. **Tenaspis.**

4. Last dorsal segment ♂ rounded. **Ellychnia.**

Last dorsal segment ♂ bisinuate and truncate. **Pyropyga.**

5. Prothorax subcarinate; ♀ with lateral light organs. **Pyractomena.**

Prothorax not carinate, frequently channelled; ♀ with medial light organs. **Photinus.**

Group III.—**Lampyres.**

A sufficient character for separating this group is found in the last joint of the antennæ which is usually appendiculate, rarely (*Pleotomus*) sinuate near the tip. The joints of the antennæ vary in number as well as form. The sexes are dissimilar; the ♀ is frequently larviform with very short scale-like elytra; the light organs seem to be always brilliant in the ♀, but variable in the ♂, sometimes well developed (*Phausis reticulata*) sometimes wanting (*P. inaccensa*). The eyes of the ♂ are very large, contiguous or nearly so, both above and beneath. In the ♀ they are moderately large (*Pleotomus*) or very small (*Microphotus*).

Antennæ bipectinate, 14-jointed, very short and compact in the ♀; eyes moderately large in ♀, very large and nearly contiguous in the ♂; ♀ with very short distant elytra. **Pleotomus.**

Antennæ simple, with quadrate joints; eleventh joint with an articulated acicular appendage; ♀ with short elytra; prothorax with transparent spots. **Phausis.**

Antennæ short, simple, with quadrate joints; 9-jointed (♂), or 8-jointed (♀); eyes very large, contiguous (♂), very small, transverse, distant (♀); elytra of ♀ very short, rounded. **Microphotus.**

Group IV.—**Luciolæ.**

The eyes are large, convex, and widely separated above and beneath in both sexes, not conspicuously larger in the ♂; the head is rounded, narrowed behind and not retractile; it is but partially covered by the prothorax, which is, however, of the usual hood-like form and rounded in front. The antennæ are longer than one-half the body, filiform, slender, not compressed, inserted near the anterior margin of the front, and moderately approximate; the second and third joints are about equal, and together are as long as each of the following joints.

The sexes are similar in form with long elytra and well developed wings; the light organs occupy the whole of the fifth and following segments; stigma-like pores are not obvious, being situated at the base of the fifth and sixth segments and less strongly marked than in Pyractomena and Photinus ♂. The seventh ventral in ♀ is obtusely triangular; in ♂ the fifth and sixth are broadly emarginate, the seventh is smaller than in ♀, sinuate at the sides and prolonged at the middle, the eighth is a little wider and longer than the prolongation of the seventh. In our species the outer (or anterior) claw is cleft at tip. The prothorax and elytra are densely rugosely punctured, the former is yellow with a black stripe or spot, each side of which the disk is red; the latter have the whole margin and frequently a discoidal stripe pale. A single genus, Photuris, occurs in our fauna with limited representation in the Atlantic region.

Tribe II.—**PHENGODINI.**

The prothorax though rounded in front does not cover the head, which is exposed. The eyes are convex, prominent, and widely separated; the antennæ are not approximate, inserted in front and inside of the eyes, and are plumose or flabellate in the ♂; (♀ unknown, except in Tytthonyx, where it is similar to the ♂). The mandibles are long, slender, and curved, the labrum connate with the front, small in Pterotus, large and emarginate in Phengodini; the middle coxæ are contiguous, the metasternum between them being narrowly carinate. The gula is deeply impressed or excavated in all the genera.

Three sub-tribes are indicated:—

Metathoracic side pieces wide. 2.
Metathoracic side pieces narrow. 3.
2. Prosternum well developed in front of coxæ; front convex, narrowed between the antennæ, which are ramose. PTEROTINI.
Prosternum very short as usual; front flat, labrum large, antennæ plumose. PHENGODINI.
3. Prosternum well developed; front convex, labrum small and indistinct. MASTINOCERINI.

Sub-Tribe 1.—**Pterotini.**

Pterotus Lec., with one Californian species, is the only representative of this sub-tribe.

Sub-Tribe 2.—**Phengodini.**

The labrum is large; metathoracic side pieces wide.

Elytra subulate, tarsi with fourth joint lobed. **Phengodes.**
Elytra entire, tarsi with third and fourth joints lobed **Zarhipis.**

Sub-Tribe 3.—**Mastinocerini.**

These are small, slender insects, having the antennæ biramose, or serrate, but not plumose as in Phengodini, the branches being less slender. The eyes are small, lateral, and convex; the epistome is somewhat convex, and the labrum is small and indistinct; the mandibles are acute but not prominent. The maxillary palpi are long, the labial very short; the gula is less deeply excavated than in *Phengodes*. The side pieces of metathorax are long and narrow, diagonally divided, with the epimera exposed. The elytra are short, dehiscent, and rounded at tip.

Antennæ ramose;
Lateral margin of prothorax acute; palpi broad. **Mastinocerus.**
Lateral margin of prothorax obliterated in front; palpi slender. **Cenophengus.**
Antennæ serrate. **Tytthonyx.**

Sub-Family III.—TELEPHORINÆ.

The insects of this sub-family are closely related to the Lampyrinæ, but are easily known by the stronger development of the mouth organs, the smaller size of the eyes, which permits the antennæ to be widely separated at the base, and by the straight, or nearly straight outline of the inner side of the metathoracic episterna.

Light organs do not exist in any of the species, and the sexes are very similar in form, differing, at most, by the length of the antennæ and the outline of the sides of the prothorax. Sexual characters are also seen in the last segments of the abdomen, especially in *Chauliognathus* and *Malthodes;* in the latter genus the claspers assume large size and great complexity. In a few instances tibial and tarsal characters distinguish the sexes, and in many species of *Telephorus* the ungues are quite different.

We have excluded the singular genus *Omethes* from this subfamily. It is probably not a Lampyride, but where it may be suitably placed we do not know.

Two tribes may be recognized in our fauna:—

Mentum very long, wider in front.	CHAULIOGNATHINI.
Mentum small, quadrate.	TELEPHORINI.

Tribe I.—CHAULIOGNATHINI.

This tribe consists of but one genus represented in our fauna by a moderate number of species. They are much more numerous in tropical America, but so far as I am aware do not occur in other countries. Chauliognathus differs from all others in our fauna not only by the elongated head, and singular structure of the maxillary lobe, which has a long extensile and contractile fleshy filament, but also by the peculiar arrangement of the under surface of the prothorax, and the sexual characters of the ♂.

Tribe II.—TELEPHORINI.

Excluding *Omethes*, as above indicated, we have no improvement to suggest to the table of groups already given, Classification, 1st ed., p. 187:—

Elytra covering the wings; gular sutures confluent; prothorax truncate in front; head entirely exposed.	PODABRI.
Elytra covering the wings; gular sutures separate; prothorax rounded in front; head partly covered.	TELEPHORI.
Elytra abbreviated, wings exposed; gular sutures confluent.	MALTHINI.

Group I.—Podabri.

Although the species of this group differ in the form of palpi, as well as in the tarsal claws, they seem to indicate but one natural genus. They are more numerous in the northern part of the continent, and gradually fade out towards the tropics.

Group II.—**Telephori.**

We find no reason for changing the table of genera previously given by Dr. Le Conte,* except to suppress *Rhagonycha*, which seems an unnecessary disintegration of Telephorus; our genera will then be as follows:—

Last joint of maxillary palpi dilated, securiform. 2.
Last joint of maxillary palpi suboval, obliquely truncate. 4.
  Hind angles of prothorax rounded. 3.
  Hind angles of prothorax (♂) incised; head short. **Silis.**
3. Head moderately long, sides of prothorax not incised. **Telephorus.**
  Head short and broad, sides of prothorax (♂) nicked at the middle. **Polemius.**
4. Sides of prothorax (♂) incised at the middle and behind, antennæ (♂) strongly serrate. **Ditemnus.**

One species of the last-named genus has recently occurred in California; with the exception of *Polemius*, they are therefore represented on both sides of the continent.

Group III.—**Malthini.**

The species of this group are of small size and weak structure, remarkable chiefly for the short elytra, which leaves the wings partly exposed and folded along the dorsal surface of the abdomen. The group has been modified, as exposed in the Classification Col. N. Am., by removing *Tytthonyx* which seems to have no relation to the other genera and to resemble them superficially merely by the abbreviated elytra.

The wealth of variation in sexual characters is greater in this group than in almost any other in Coleoptera. In *Ichthyurus* it affects the middle legs of the ♂, and in *Malthodes* the last abdominal segments of both sexes, and the forms of the claspers are quite as complex as those represented by Baron R. Osten Sacken in the Tipulidæ with short palpi, Proc. Acad. Nat. Sci. Phila., 1859, pl. 3 and 4. The species are probably numerous, but have not yet received much attention from collectors. The European species, which run somewhat parallel with ours, have been excellently illustrated by the late Dr. H. von Kiesenwetter, Linn. Ent. vii, pl. 2.

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* Classification, 189.

Palpi with the last joint elongate, securiform; metathoracic episterna wide in front, strongly triangular. 2.

Palpi with the last joint oval pointed; metathoracic episterna narrow; claws simple. 3.

2. Claws appendiculate; mandibles toothed. **Trypherus.**

Claws simple. **Lobetus.**

3. Mandibles toothed, head wide, narrowed behind. **Malthinus.**

Mandibles simple, head not narrowed behind. **Malthodes.**

FAM. XLV.—**MALACHIIDAE.**

Mentum small, quadrate, corneous; ligula prominent; palpi 3-jointed.

Maxillæ exposed at the base, with two unarmed lobes; palpi moderately long, 4-jointed.

Antennæ inserted upon the front at the sides, generally before the eyes; usually serrate, and 11-jointed.

Head exserted, prolonged into a short broad beak; eyes rounded (emarginate in some foreign genera); mandibles small; labrum distinct; epistoma separated from the front by a transverse suture, and frequently, in whole or in part, membranous.

Prothorax not foliaceous at the sides; prosternum short, not extending between the coxæ; coxal cavities large, transverse, open behind.

Mesosternum short, oblique, flat, side pieces attaining the coxæ.

Metasternum short, side pieces usually wide, epimera scarcely visible.

Elytra sometimes entire, sometimes abbreviated.

Abdomen with six free ventral segments; the sixth indistinct in some genera of the second tribe.

Anterior coxæ large, conical, contiguous, with distinct trochantin; middle coxæ contiguous, conical, prominent; posterior coxæ transverse, conical, and prominent internally; not covered by the thighs.

Legs moderately long, slender; tibiæ with indistinct terminal spurs; tarsi 5-jointed (the anterior ones in the males of certain foreign genera, 4-jointed), filiform; the fourth joint entire (except in a few foreign genera); claws usually each with a large inferior membranous appendage.

This family was first established by Erichson, under the name Melyridæ, and though considered by Lacordaire as only a portion of his family Malacodermes, it appears to us fully capable of taking rank as distinct. The different position of the antennæ, and the presence of the separate piece between the labrum and the front, distinguish it from the Lampyridæ, as herein defined.

It is, moreover, remarkable for exhibiting certain characters not seen in the neighboring families; thus in one tribe the body is furnished with soft extensible vesicles, and the ventral segments of the abdomen are frequently in part membranous; in the second, the apparent ventral segments are sometimes but five in number; the occurrence of membranous appendages between the claws of the tarsi is almost universal; and the fourth joint of the tarsi is bilobed, only by a very rare exception.

The affinities of the family appear to conduct directly from the Lampyridæ to the Cleridæ, with a strong tendency to inosculate, through Byturus, with the Dermestidæ. We have already observed in the Byrrhidæ and Parnidæ on the one side, and the Dascyllidæ on the other, similar affinities between the Serricorn and Clavicorn series.

We would consider our genera as indicating three tribes:—

Body with extensible vesicles.	MALACHIINI.
Body without vesicles;	
Eyes finely granulated;	DASYTINI.
Eyes coarsely granulated.	RHADALINI.

Tribe I.—MALACHIINI.

Body with lateral vesicles capable of distension; the anterior pair proceeding from a fissure beneath the anterior angles of the prothorax: head short; mandibles toothed at the extremity; eyes entire, finely granulated; palpi moderate, in our genera slender; last joint of the tarsi with two membranous appendages beneath the claws; ventral segments six, always distinct.

The species of this tribe are small insects found on flowers, and on the ground near water; many of them are of pleasing colors, but all are of small size. The form is varied, some resembling at first view certain Staphylinidæ

Our genera are numerous, and may be tabulated thus :—

Antennæ apparently 10-jointed.	**Collops.**
Antennæ distinctly 11-jointed;	
Anterior tarsi ♂ 4-jointed;	
Head short, first joint of antennæ ♂ with recurrent process.	**Temnopsophus.**

Head elongate, first joint of antennæ cylindrical. **Trophimus.**
Anterior tarsi 5-jointed in both sexes;
Elytra short.
Body apterous in both sexes; abdomen without bristles. **Endeodes.**
Abdomen with long bristles; ♂ winged. **Chaetocoelus.**
Elytra long.
Antennæ inserted on the front nearly between the eyes;
Second joint of anterior tarsi ♂ simple. **Malachius.**
Second joint slightly covering the third; head long. **Tanaops.**
Antennæ inserted at the anterior edge of the front near the sides.
Anterior tarsi ♂ simple.
Form elongate, legs long; anterior tarsi ♂ somewhat dilated; females apterous. **Microlipus.**
Form broader, legs moderate; females winged.
Elytra similar in the sexes. **Anthocomus.**
Elytra prolonged at tip in the male. **Pseudebaeus.**
Anterior tarsi ♂ with second joint prolonged over the third; elytra similar in the sexes. **Attalus.**

Hapalorhinus has been united with Malachius and Acletus with Attalus. The species formerly referred to Ebaeus have been removed to Pseudebaeus.

Collops and Attalus are widely diffused, Endeodes, Tanaops, and Malachius (excepting *M. aeneus* which has been introduced) are peculiar to the west coast fauna, the other genera belong to the Atlantic region, and Chaetocoelus to Texas.

Temnopsophus is remarkable for its ant-like form, a character repeated by Myrmecospectra *Motsch.*, a Ceylon genus, having antennæ as in Collops.

Tribe II.—**DASYTINI.**

Body without lateral vesicles; angles of the prothorax not fissured beneath; antennæ inserted on the sides of the head, in front of the eyes, which are finely granulated. Claws of the tarsi either with or without membranous appendages.

In some genera of this tribe, the middle and hind coxæ resemble those of Byturus, which, however, differs by the anterior coxæ being separated by the prosternum, and by the tarsi being lobed beneath. To add to the resemblance, the sixth ventral segment is frequently by no means distinct.

Our genera are as follows, all having the last joint of the maxillary palpi nearly cylindrical.

First joint of tarsi not shorter than the second (body punctured);
Head without beak.
Claws of the tarsi with membranous appendages,
which are broad and connate entirely or in great part with the claws; thorax without impressed lines;
Anterior tibiæ with a range of spines on the outer margin; thorax not serrate or ciliate at the sides. **Pristoscelis.**
Anterior tibiæ not spinous; thorax ciliate at the sides which are usually serrate;
Appendages of claws equal. **Listrus.**
Appendages of claws unequal. **Dolichosoma.**
Which are narrow and free almost to the base; thorax with an impressed line near the lateral margin;
Both claws with appendages. **Eschatocrepis.**
One claw with an appendage, the other toothed at base. **Allonyx.**
Claws of the tarsi broadly toothed, without appendages. **Dasytes.**
Head with a flat beak, as long as the head itself;
Claws of the tarsi slender without appendages. **Mecomycter.**
First joint of tarsi shorter than the second; claws without appendages (body cribrate-punctate, edge of thorax and elytra serrate). **Melyris.**

The species in our collections appertain as follows, to the genera above mentioned. Those of Pristoscelis may be divided into three groups: 1. Pubescence not erect, appendages of claws rounded at tip (Byturosomus and Emmenotarsus *Motsch.*); *D. rufipes* Motsch. (*griseus*‖Lec.); *brevicornis* Lec.: 2. Pubescence not erect, appendage of one claw truncate (Trichochrous *Motsch.*); *D. fuscus* Lec.: 3. Pubescence erect, appendages of claws rounded at tip (Emmenotarsus *Motsch.*); *D. rufipennis* Lec., *D. quadricollis* Lec., and the remaining species of my group A—a. (Proc. Acad. Nat. Sc., Philadelphia, VI. 169.)

To Listrus *Motsch.*, belong *D. canescens* Mann., and allied species; this and the preceding genus is distributed from Kansas to the Pacific.

Of Eschatocrepis but one Californian species, *D. constrictus* Lec., is known to us; it is closely allied to the European Haplocnemus in characters, but differs in appearance. Of Allonyx, also, but one Californian species, *D. sculptitis*, is known. Several species of Dasytes occur in California, and one in Texas.

To Melyris belong two species from the Atlantic States, and two from the Pacific.

Mecomycter contains one small species from Kansas, and shows a tendency towards Prionocerus.

Dolichosoma contains three species, distributed from Canada to Texas.

Tribe III.—**RHADALINI.**

A single species, *Rhadalus testaceus* Lec., from California and Arizona, by its strongly granulated eyes, and much elongated maxillary palpi, with the last joint large and securiform is capable of being received as a distinct tribe. It is a transition form from the present to the next family, from which it differs by the joints of the tarsi not being lobed or spongy beneath, and by the claws being provided with long membranous appendages which are free, except at base.

Fam. XLVI.—**CLERIDAE.**

Mentum quadrate, moderate in size; ligula membranous, or coriaceous, without paraglossæ; labial palpi 3-jointed, frequently very long and dilated.

Maxillæ exposed at the base, with two ciliate unarmed lobes; palpi 4-jointed, with the last joint frequently securiform.

Head prominent, eyes usually emarginate; epistoma distinct from the front, membranous or coriaceous anteriorly; mandibles short, labrum distinct.

Antennæ inserted at the sides of the front, usually 11-jointed, serrate, or pectinate, or with the outer joints enlarged forming a serrate, or rarely a compact club.

Prothorax with the side pieces not separate, though in one tribe they are defined by a side margin; coxal cavities open behind, sometimes round, sometimes transverse; prosternum short, not prolonged.

Mesosternum flat, side pieces extending to the coxæ.

Metasternum with long narrow side pieces; epimera scarcely visible.

Elytra entire, or nearly so, with the epipleuræ distinct, narrow.

Abdomen with five or six free ventral segments.

Anterior coxæ conical, prominent, contiguous, or very slightly separated, trochantin sometimes distinct; middle coxæ rounded, not or very slightly prominent, and not contiguous in many, but conical and prominent in Enopliini, usually with distinct trochantin; hind coxæ transverse, not prominent, covered by the thighs in repose.

Legs slender, frequently long, trochanters on the internal margin of the thighs; tibiæ with the terminal spurs small or indistinct; tarsi 5-jointed, the fourth joint in Enopliini very small and indistinct; joints 1–4 furnished beneath with membranous appendages; claws simple or toothed, never with membranous appendages as in Melyridæ.

A tolerably numerous family of insects found on plants, or on the trunks of trees, but which in the larva state are carnivorous, preying upon other insects like the Lampyridæ and Melyridæ. The larvæ of various Trichodes are found in the nests of bees. A few (Corynetes, Necrobia) live on dead animal matter. Many of the species are of beautiful color and graceful form.

The genera may be arranged in two tribes.

Tarsi with fourth joint of normal size; pronotum continuous with the flanks of the thorax.	CLERINI.
Tarsi with the fourth joint very small and indistinct; pronotum separated from the flanks by a marginal line.	ENOPLIINI.

Tribe I.—CLERINI.

The fourth joint of the tarsi equal to the third, and the flanks of the prothorax continuous with the back, are sufficient to cause the members of this tribe to be recognized: we may only say farther, that the middle coxæ are scarcely prominent, and are moderately distant. Three groups are indicated by the genera represented in our fauna:—

First joint of tarsi distinct, at least equal to the second.	TILLI.
First joint of tarsi covered by the second;	
Eyes emarginate in front.	CLERI.
Eyes entire.	HYDNOCERI.

Group I.—Tilli.

Insects of a very long and slender form; the head is large; the eyes transverse, emarginate in front: the prothorax long, with the coxal cavities smaller than usual; the middle coxæ are round, slightly prominent; tarsi with five distinct joints, the first frequently longer than the second; claws toothed; maxillary palpi with the last joint cylindrical.

Antennæ 10-jointed, the last joint very long and flat.	**Elasmocerus.**
Antennæ 11-jointed; serrate;	
Eyes finely granulated;	
Labrum entire.	**Tillus.**
Labrum emarginate, posterior thighs elongated.	**Perilypus.**
Eyes coarsely granulated.	**Cymatodera.**

Elasmocerus inhabits the Atlantic district, Cymatodera is widely diffused, the representatives of the other genera are unknown to us. *Tillus collaris* is found in Georgia, and Perilypus is said to be from California.

Group II.—**Cleri.**

Head large, eyes not very prominent, usually emarginate in front; middle coxæ rounded, slightly prominent; tarsi with the first joint much shorter than the second, and covered by it, so as not to be visible from above; the species are more numerous than in the other groups.

- Eyes strongly granulated.
  - Antennæ serrate; labial palpi alone dilated. **Priocera.**
  - Antennæ with joints 9–11 longer.
    - Last joint of labial palpi alone dilated. **Opilus.**
    - Last joint of both palpi dilated. **Tarsostenus.**
- Eyes finely granulated.
  - Last joint of both palpi broadly dilated.
    - Antennæ with abruptly formed, loose 3-jointed club. **Aulicus.**
    - Antennæ gradually broader to tip. **Trogodendron.**
  - Last joint of labial palpi alone dilated.
    - Last joint of maxillary palpi a little broader than the preceding joint.
      - Antennal club more or less triangular. **Trichodes.**
    - Last joint of maxillary palpi slender.
      - Eyes feebly convex, distinctly emarginate.
        - Posterior tarsi rather broadly dilated. **Clerus.**
        - Posterior tarsi slender and longer. **Thanasimus.**
      - Eyes more convex, not emarginate.
        - First joint of tarsi very short. **Thaneroclerus.**

Trichodes, Clerus, and Thanasimus are widely extended, Aulicus and Trogodendron occur in California and Arizona; the other genera are represented only in the Atlantic district.

Cleronomus is not sufficiently distinct from Thanasimus which in turn seems hardly to differ from Clerus.

Group III.—**Hydnoceri.**

Head large, eyes very prominent, entire; middle coxæ not prominent, slightly separated; tarsi with the first joint shorter than the second, principally inferior; maxillary palpi cylindrical.

But one genus of this group, Hydnocera, exists in our fauna. It is widely diffused; the species are small, and have the form of Cicindela; they are found on leaves of trees, and are active, taking wing easily. The antennæ are short, slender, and terminated by a small rounded mass composed of two joints.

Tribe II.—**ENOPLIINI.**

In this tribe the fourth joint of the tarsi is very small, and rudimentary, forming merely a slight enlargement at the base of the last joint; the pronotum is separated from the flanks (except in Ichnea) by a more or less distinct elevated margin. The middle coxæ are prominent, conical, and contiguous in the first group, but not prominent and slightly separate in the second, in which too are found the only species which devour dead animal matter.

Antennæ with the external joints large, flattened, triangular.	ENOPLIA.
Antennæ with the last three joints forming a small club.	CORYNETES.

Group I.—**Enoplia.**

The last joints of the antennæ in these insects are flat, much dilated and triangular, thus forming a serrate mass; in the male the inner angle of the triangular joints is frequently prolonged greatly. Finding that in Phyllobænus the pronotum is defined by a distinct lateral line, it has been removed to the present tribe, instead of constituting with it a group of the previous tribe. The structure of the tarsi is also as in Enoplium, the fourth joint being very small. Ichnea, with the tarsi and antennæ of this tribe and group, presents a thorax having the pronotum entirely continuous with the flanks, as in the preceding tribe.

A. Eyes emarginate internally;
  Antennæ 10-jointed,* club 3-jointed, not longer than the other portion. **Phyllobænus.**
  Antennæ with intermediate joints indistinct and very short, club 3-jointed, with each joint as long as the basal part of the antennæ. **Ichnea.**
B. Eyes emarginate in front;
  First joint of tarsi equal to the second, antennæ 11-jointed;
    Anterior tibiæ serrate externally. **Charlessa.**
    Anterior tibiæ not serrate. **Cregya.**
  First joint of tarsi shorter than the second, inferior;
    Eyes finely granulate, antennæ 10-jointed. **Enoplium.**
    Eyes coarsely granulate, antennæ 11-jointed. **Orthopleura.**

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* Lacordaire and Spinola both describe the antennæ as 11-jointed; after examining several individuals, we find the number of joints to be only ten.

We have combined with Chariessa, *Pelonium* Spin., as there does not appear to be any sufficient character to separate them. The species having the sides of the thorax sinuate, differ by the anterior tibiæ not being serrate externally, and they have therefore been separated to form the genus Cregya: they are *Pelonium vetustum* Spin., *Enoplium fasciatum* Lec., and *Clerus oculatus* Say. Of these genera Chariessa and Cregya are represented in the Pacific as well as in the Atlantic districts.

Group II.—**Corynetes.**

Insects of small size, with the antennæ 11-jointed, the last three joints forming a small club; the maxillary palpi are longer than the labial, which are only of ordinary length, and not of large size as in the preceding members of this family. Our species of Necrobia have been introduced from Europe, and live on animal materials in houses, and in dried carrion in the open air.

The genera are as follows:—

First joint of tarsi equal to the second;
  Club of antennæ elongated, loose. **Lebasiella.**
  Club of antennæ small, compact. **Laricobius.**
First joint of tarsi shorter and partly covered by the second, club of antennæ compact;
  Palpi with the last joint elongate, truncate. **Necrobia.**
  Palpi with the last joint subulate. **Opetiopalpus.**

The genus Laricobius is remarkable for the elytra having rows of large quadrate punctures: the thorax is smaller than usual, transverse, marked with large scattered punctures. The species is one-tenth of an inch long, of a brownish-red color, clothed with short black hairs: Dr. LeConte has named it *L. rubidus;* but it does not differ from the European *L. Erichsonii.*

FAM. XLVII.—**PTINIDAE.**

Mentum usually small and quadrate, sometimes larger and transverse, corneous; ligula membranous or coriaceous, without paraglossæ; palpi 3-jointed, short.

Maxillæ exposed at base, with two ciliate lobes, the internal one sometimes very small; palpi 4-jointed, short.

Antennæ inserted upon the front in the first sub-family, at the sides of the front in the others, having from 9–11 joints, variable in form.

Head retractile, frequently protected by the prothorax; oral organs usually small; epistoma sometimes distinct; labrum distinct in all of our genera.

Prothorax with the side pieces not separate; lateral margin none in the first tribe, distinct in the second; coxal cavities rounded, open behind.

Mesosternum small, oblique; side pieces not attaining the coxæ.

Metasternum moderate or long, side pieces narrow.

Elytra entire; epipleuræ distinct, sometimes very broad.

Abdomen with five ventral segments, the first not elongated, except in Lyctinæ.

Anterior and middle coxæ cylindrical or subglobose, moderately or but slightly prominent, without trochantins; posterior coxæ transverse, not prominent or dilated internally in the first; sulcate behind for the reception of the thighs in the second; slightly prominent internally in the third and fourth sub-families.

Legs contractile in the second sub-family, frequently long; trochanters in the axis of the thighs; tibiæ slender, with the terminal spurs sometimes small, sometimes large; tarsi 5-jointed, but with the first joint small in the third and fourth sub-families.

A family containing species, mostly of small size, which live on vegetable matters in an incipient stage of decay; many are therefore found about houses, and have been transported by commerce over the whole globe. The form varies greatly according to the sub-family.

Four sub-families are indicated as follows:—

Antennæ inserted upon the front.	PTININÆ.
Antennæ inserted before the eyes;	
Tibiæ without spurs.	ANOBIINÆ.
Tibiæ with distinct spurs;	
First ventral segment scarcely longer.	BOSTRICHINÆ.
First ventral segment elongated.	LYCTINÆ.

Sub-Family I.—PTININÆ.

These insects are of small size, with the head and thorax comparatively small. The antennæ are inserted upon the front, long, not serrate, and rather stout. The legs are long, not contractile, with the trochanters large; the tibiæ have the spurs obsolete; in the first tribe the first joint of the tarsi is not shorter than the second. The hind coxæ are transverse, and are covered by the thighs, in repose. The flanks are continuous with the pronotum.

Two tribes may be separated thus:—

Antennæ very approximate.	Ptinini.
Antennæ distant.	Eucradini.

Tribe I.—**PTININI.**

The antennæ are very approximate at base, long and filiform; the elytra when glabrous are very much inflated, and embrace the sides of the trunk very widely, leaving the ventral segments very small and narrow.

Our genera are:—

Elytra inflated, smooth, glabrous.	2.
Elytra punctured, pubescent.	3.
2. Prothorax smooth, glabrous.	**Gibbium.**
Prothorax tuberculate, pubescent.	**Mezium.**
3. Prothorax constricted behind.	4.
Prothorax narrowed, but not constricted behind; mentum triangular.	**Trigonogenius.**
4. Teeth of mentum rounded; labrum emarginate.	**Niptus.**
Teeth of mentum acute; labrum rounded.	**Ptinus.**

The first joint of the tarsi is long in Ptinus, but only equal to the second in the other genera.

Gibbium scotias is imported from Europe, as are some of the species of Ptinus, which genus is however generally diffused. Niptus is represented by one New Mexican, and Trigonogenius by one Californian species.

Tribe II.—**EUCRADINI.**

This tribe, while evidently related to the preceding tribe, differs by having the antennæ widely separated at the base; the thorax is tuberculate, the elytra are cylindrical, and do not embrace the flanks. The trochanters are moderate, the tibiæ are terminated by a single spur; the first joint of the tarsi is long.

Two genera constitute this tribe:—

Tibiæ with large terminal spur: antennæ of ♂ pectinate, of ♀ serrate; elytra with close rows of punctures.	**Eucrada.**
Tibiæ without distinct spur: antennæ slender; elytra with scattered granules.	**Hedobia.**

Each genus is represented by one species, Eucrada in the Atlantic region, Hedobia in California.

Sub-Family II.—ANOBIINÆ.

The insects of this sub-family are generally of a cylindrical form, though some of the species of Dorcatoma, and especially Cænocara, are nearly globular. The antennæ are distant at base and inserted immediately in front of the eyes; they are either simply serrate, or have the three outer joints longer; rarely (male of Ptilinus) they are flabellate. The hind thighs in repose are received by the hind coxæ, which are deeply sulcate behind for that purpose, and form a plate, which is not dilated inwards. The trochanters are short; the legs are retractile, the tibiæ have obsolete spurs, and the first joint of the tarsi is not shorter than the second. The lateral margin of the pronotum is distinct in all of our genera, except Gastrallus.

Two tribes are represented in our fauna:—

Eyes almost in contact with the prothorax. ANOBIINI.
Eyes distant from the prothorax. PTILININI.

Tribe I.—**ANOBIINI.**

The form is less regularly cylindrical than in the next tribe; the head is usually very retractile and deflexed, so as to be not visible from above, in a state of repose, and the eyes are in contact with the anterior margin of the thorax.

Four sub-groups may be formed, thus:—

Head received in repose upon the under surfaces of the prothorax (Group Anobia). 2.
Mandibles in repose resting upon the mesosternum (Group Xyletini). 3.
2. Head free; prothorax not excavated beneath. DRYOPHILI.
Head received in excavation of prothorax. ANOBIA.
3. Antennæ received in excavations on the under surface of the head. XYLETINI.
Antennæ received between the front coxæ. DORCATOMATA.

Sub-Group 1.—DRYOPHILI.

In these species the body is elongate, the head capable of being only moderately deflexed: the prothorax not excavated beneath for the reception of the head, and the legs not received in cavities. The antennæ are 11-jointed, with the last three joints broader, and sometimes very much elongated; in repose they rest loosely upon the front coxæ. The anterior aperture of the prothorax is circular, and the lateral margin is distinct in our genera, which are:—

Front coxæ separated by prosternum. 2.
Front coxæ conical, contiguous, prominent. **Ernobius.**
2. Prosternum moderate; tarsi narrow. **Ozognathus.**
Prosternum very short; tarsi broad. **Xestobium.**

These genera are represented on both sides of the continent. *Ozognathus cornutus*, bred from oak galls in California, is remarkable by the mandibles of the ♂ being provided at base with a long, slender, curved horn, which, at tip, meets its fellow of the opposite side.

Sub-Group 2.—ANOBIA.

The body is usually elongate in form; the head is capable of being strongly deflexed, and rests in repose in the excavated under surface of the prothorax: the antennæ usually received into a more or less distinct excavation between the front and middle coxæ, which is sometimes prolonged into the metasternum. The mandibles do not reach the metasternum, and the head is never excavated beneath for the reception of the antennæ. The antennæ usually have the last three joints enlarged, and the stem not serrate, though these characters vary much. The anterior opening of the prothorax is circular: the epipleuræ are foveate for the reception of the knees in Petalium and Theca, and the hind legs are received in ventral excavations in Theca and Eupactus.

The genera are numerous and may be tabulated as follows:—

First ventral segment not excavated. 2.
First ventral segment excavated for reception of hind legs. 12.
2. Metasternum not excavated in front. 3.
Metasternum deeply excavated in front. 10.
Metasternum produced in front into a large lobe. 11.
3. Antennæ not received between the coxæ, but resting upon them. 4.
Antennæ received between the front coxæ. 5.
4. Front coxæ contiguous; antennæ 9- or 10-jointed. **Oligomerus.**
Front coxæ nearly contiguous; antennæ 11-jointed. **Sitodrepa.**
5. Antennæ not pectinate. 6.
Antennæ pectinate. **Ctenobium.**
6. Thighs not clavate. 7.
Thighs strongly clavate; tarsi dilated. **Ptinodes.**
7. Tarsi slender. 8.
Tarsi dilated. 9.
8. Prothorax margined; ventral segments separate. **Hadrobregmus.**
Prothorax not margined; first and second ventral segments connate. **Gastrallus.**
9. Claws broadly toothed. **Trichodesma.**
Claws not toothed. **Nicobium.**

10. Antennæ not serrate, joints 9–11 long. **Anobium.**
Antennæ serrate, joints 9–11 scarcely longer. **Trypopitys.**
11. Epipleuræ foveate; joints of antennæ 9–11 long. **Petalium.**
12. Mesosternum carinate; epipleuræ foveate at the middle; joints of antennæ 9–11 long. **Theca.**
Mesosternum emarginate; joints of antennæ 9–11 large, the last two closely connected, though not connate. **Eupactus.**

Sitodrepa has been introduced in articles of commerce, and is cosmopolitan; Ptinodes has one species in California. Hadrobregmus, Anobium, and Trypopitys occur on both sides of the continent, as also Eupactus; the others are represented only in the Atlantic region, Gastrallus in Colorado.

Sub-Group 3.—Xyletini.

This sub-group differs from the preceding only by the antennæ being curved around the under surface of the head in repose, instead of being extended straight along the middle of the body; the genera are but few, as follows:—

First ventral segment not excavated. 2.
First ventral segment excavated for the reception of the hind legs: joints of antennæ 9–11 large. 5.
2. Elytra striate. 3.
Elytra not striate. 4.
3. Antennæ serrate, joints 9–11 elongate. **Vrilletta.**
Antennæ serrate, joints 9–11 not longer. **Xyletinus.**
4. Antennæ serrate, joints 9–11 not longer. **Lasioderma.**
Antennæ not serrate, joints 9–11 large. **Catorama.**
5. Epipleuræ not foveate. **Hemiptychus.**
Epipleuræ foveate. **Protheca.**

Except Protheca, which belongs to the Atlantic region, and Vrilletta to the Pacific coast, these genera are represented on both sides of the continent.

Sub-Group 4.—Dorcatomata.

The body is oval-convex, or even globose, capable of being closely contracted. The head, when deflexed, is received into a deep cavity of the prothorax, and the mandibles abut against the front margin of the metasternum, which is prolonged between the middle coxæ into a short broad lobe, nearly truncate in front. The antennæ are received in a deep sternal cavity between the front coxæ, and in the mesosternum, which is deeply buried under the metasternal process: the 1st joint is large and auriculate, and the last three joints dilated, very large, forming a loose club, much longer than the preceding portion. The prosternum is very short and broad, and separates widely the front coxæ, which are small, conical, and ascend perpendicularly the sides of the cavity. The middle legs are received in deep excavations of the meso- and metasternum, the tarsi rest in small deep grooves behind the metasternal process, and the knees in subhumeral cavities of the epipleuræ. The first ventral segment is deeply excavated, each side, for the reception of the hind legs; the knees are not received in epipleural foveæ. The ventral segments seem disposed to become connate.

Our genera are three, distinguished as follows:—

Elytra not striate.
  Prosternum produced behind into two long horns, metasternal lobe narrowed at base. **Dorcatoma.**
  Prosternum broadly truncate behind, metasternal lobe short. **Cænocara.**
Elytra striate; metasternum with large anterior lobe not narrowed behind. **Byrrhodes.**

Four species of Dorcatoma occur in the Atlantic region: and five of Cænocara, one in California, the others in the Atlantic region; Byrrhodes in Florida.

Tribe II.—PTILININI.

The head is deflexed, less retractile than in the preceding groups; the eyes are rounded and distant from the thorax in the female, but larger in the male; the antennæ are 11-jointed, serrate in the female, and branched in the male. The last joint of the palpi is oval. The thorax is convex, rounded in front, protecting the head, and granulate with small tubercles towards the apex; it is not excavated beneath, and the prosternum is moderately developed in front of the coxæ, which are large and contiguous. The plates of the hind coxæ are exceedingly narrow. The legs are moderately retractile, and the first joint of the tarsi is longer than the second.

Antennæ of ♂ flabellate; eyes small. **Ptilinus.**
Antennæ of ♂ pectinate; eyes large. **Euceratocerus.**

Ptilinus is represented on both coasts of our country; it approaches closely in form certain members of the tribe of the next sub-family, and establishes a transition between the two. A slight relation with Melasis of the sub-family Eucneminæ is likewise quite obvious; Euceratocerus occurs in Texas.

Sub-Family III.—BOSTRICHINÆ.

The insects of this sub-family are elongate in form; the head is usually deflexed, and protected by the thorax, which is then hood-like in form; in one tribe, Psoini, it is prominent, and not covered. The mentum is usually small, but in Psoini is large and transverse. The antennæ are distant, and inserted immediately in front of the eyes, upon, or under the frontal margin, and the three outer joints are always larger. The eyes are small, convex, rounded, and distant from the prothorax. The pronotum is not separated from the flanks by a marginal line, except in the first tribe. The anterior coxæ are large, globose or sub-conical; the hind coxæ are not sulcate behind, and project at the inner part; the spurs of the middle and hind tibiæ are distinct, and the anterior tibiæ are terminated by one long spur, and usually serrate; the trochanters are short; the first joint of the tarsi is very short, sometimes obsolete; the fifth joint is long, with simple claws. The first ventral segment is but slightly longer than the second.

Three tribes are indicated:—

Thorax with distinct lateral margin. **ENDECATOMINI.**
Thorax without lateral margin;
  Head covered by prothorax; anterior coxæ contiguous. **BOSTRICHINI.**
  Head prominent; anterior coxæ distant. **PSOINI.**

Tribe I.—ENDECATOMINI.

The genus Endecatomus, placed by previous authors in the family Cioidæ, seems, for reasons indicated elsewhere, to belong rather to the present, in which it constitutes a distinct tribe.

The head is covered in part by the prothorax, which is distinctly margined at the sides. The epistoma is separated from the front by a very distinct suture; the antennæ are 11-jointed, with a loosely articulated 3-jointed club. The anterior coxæ are prominent, and contiguous; the terminal spur of the anterior tibiæ is large and hooked. The last joint of the tarsi is very long.

The species known, *Endecatomus rugosus* and *E. reticulatus*, are oblong convex blackish-brown dull insects, covered with inequalities and small erect brown hairs; they are less than one-fifth of an inch long, and found in fungi. They seem to have but little relation to the Cioidæ, but to be rather a connecting link between Bostrichus and Anobium.

Tribe II.—**BOSTRICHINI.**

The insects of this tribe are moderate in size, or small, of a cylindrical form, with the head deflexed, prolonged behind the small prominent eyes, and covered by the hood-like prolongation of the prothorax; the epistoma is separated by a moderately distinct suture; the anterior part of the prothorax is usually rough with tubercles, and in the genus Bostrichus is frequently prolonged, forming two short horizontal horns; the anterior coxal cavities are confluent; the hind part of the elytra is frequently obliquely declivous. The antennæ have 9–11 joints in our genera, and the club is 3- or 4-jointed. The external margin of the anterior tibiæ is more or less serrate in all of our genera.

Our genera are found in fungi, and under bark:—

Intermediate joints of antennæ shorter than the first and second.	
Tarsi long, slender, first joint very short.	
Antennæ with a three-jointed club.	**Sinoxylon.**
Antennæ with a four-jointed club.	**Tetrapriocera.**
Intermediate joints of antennæ longer than the first and second.	
Tarsi as long as the tibiæ, slender, second joint long.	
Front margined, at the sides at least.	**Bostrichus.**
Front not margined.	**Amphicerus.**
Tarsi short, second joint not elongated.	**Dinoderus.**

The type of Tetrapriocera is *Bostrichus longicornis* Oliv., occurring in Florida and the West Indies. Rhizopertha has been suppressed as not sufficiently distinct from Dinoderus.

Tribe III.—**PSOINI.**

The insects composing this tribe are of large or moderate size; the thorax is oval, not margined at the sides, truncate in front, not protecting the head, which is large and prominent. The club of the antennæ is 3-jointed. The anterior coxæ are separated by the prosternum. Tarsi slender, elongate, four-jointed in *Psoa*, five-jointed in *Polycaon*, the first joint being very small.

Two genera occur in our fauna:—

Anterior coxæ separated, tibiæ serrulate.	**Polycaon.**
Anterior coxæ contiguous, tibiæ slender, simple.	**Psoa.**

Exopioides *Guér.* has been united with Polycaon, the ten-jointed antennæ being the differential character of the former. *Acrepis*

Lec. does not differ essentially from Psoa, and another instance is thus presented of the analogy of the fauna of the western side of our own continent with that of Europe.

Sub-Family IV.—LYCTINÆ.

The head is prominent, somewhat narrowed behind the eyes, not covered by the prothorax, which is trapezoidal in form, and has a fine lateral margin. The antennæ are 11-jointed, and the club is rounded, and consists of but two joints; the epistoma is separated from the front by an indistinct suture. The anterior coxæ are entirely inclosed and separated by the prosternum; the middle ones are also moderately separated, and the hind coxæ are widely distant; the first ventral segment is much longer than the others.

Our genera are two, both containing species of small size:—

Anterior tibiæ with the outer apical angle prolonged.	**Lyctus.**
Anterior tibiæ with the outer apical angle not prolonged.	**Trogoxylon.**

The type of Trogoxylon is *Xylotrogus parallelipipedus* Mels., from the Middle States.

Lyctus is attached by Lacordaire to the Cioidæ, but he admits the difficulty of placing it properly in any family; from the 5-jointed tarsi, with the first joint very short, and the distinct terminal spur of the anterior tibiæ, it and Endecatomus seem more naturally placed in the present than in the Cioidæ.

Lacordaire states that the anterior and middle coxæ are contiguous in Lyctus; they are not so in any of our species, and although nearly in contact in *L. striatus*, they are widely separate in *L. planicollis*.

Fam. XLVIII.—**CUPESIDAE.**

Mentum small, transverse, corneous; ligula small bilobed; palpi 3-jointed.

Maxillæ uncovered at the base, but concealed in the deep buccal cavity, with two lobes, the outer one corneous, hooked; palpi 4-jointed, short.

Antennæ inserted upon the front, approximate, rigid, filiform, moderately elongated, 11-jointed.

Head porrected, tuberculate, suddenly constricted behind;

eyes round, prominent, very finely granulated; lower surface with the genæ large and prominent, forming a deep buccal cavity; mandibles small; labrum very short, truncate.

Prothorax small, quadrate, lateral margin well defined, episterna separate; prosternum entire, with a slight point behind fitting into the mesosternum; coxal cavities small, transverse, open behind.

Mesosternum large, quadrate, receiving in front the extremity of the prosternum; side pieces excavated for the middle legs, and attaining the coxæ.

Metasternum moderate, side pieces narrow, epimera not visible.

Elytra entire, with rows of large square punctures, and intermediate ribs; epipleuræ narrow, extending to the apex.

Abdomen with five free ventral segments.

Anterior coxæ small, not prominent, slightly separated; middle coxæ quadrate, flat, contiguous; posterior transverse, flat, sulcate posteriorly, receiving the thighs in repose.

Legs slender, contractile; tibiæ without terminal spurs; tarsi 5-jointed, slightly dilated, spongy beneath; claws small, simple.

A family containing three very anomalous genera, of which two inhabit the United States; while one, Omma, is found in Australia. They are found under bark of decaying trees, and also occasionally in houses.

Antennæ distant; flanks of prothorax flat. **Priacma.**

Antennæ less distant; flanks of prothorax excavated for reception of front legs. **Cupes.**

Both genera are found in the Pacific region, each with one species: Cupes is represented in the Atlantic region by two species.

The affinities of this family are very obscure; in the form and insertion of the antennæ it is similar to the first genera of the Ptinidæ, but other characters, such as the form of coxæ and retractility of the legs, are at variance. The body is covered with small scales.

In this condition of doubt, we leave the family where it was placed by Lacordaire, believing it like Rhyssodidæ, Hypocephalidæ, Brenthidæ, and some other families to be survivals of very ancient synthetic types.

FAM. XLIX.—LYMEXYLIDAE.

Mentum small, quadrate, corneous; ligula coriaceous, small; palpi 3-jointed.

Maxillæ exposed at base, with two small ciliate lobes; palpi 4-jointed, stout, in the male very large, flabellate, except in Micromalthus.

Antennæ inserted at the sides of the head, 11-jointed, serrate.

Head deflexed, narrowed behind; mandibles moderate, labrum and clypeus distinct.

Prothorax with the lateral margin well defined, except in Micromalthus, side pieces not separate; prosternum short; coxal cavities round, confluent in our genera, open behind.

Mesosternum small, flat, side pieces large, attaining widely the coxæ.

Metasternum long, with narrow side pieces; epimera not visible.

Elytra nearly as long as the abdomen in our genera, much abbreviated in Atractocerus.

Abdomen with five free ventral segments in Lymexylon, with six in Hylocoetus and Micromalthus.

Anterior coxæ conical, large, prominent, contiguous in our genera, distant in Atractocerus; middle coxæ also large, conical, contiguous; posterior coxæ transverse, conical, prominent internally, contiguous.

Legs slender, moderately long; tibiæ with small terminal spurs; tarsi 5-jointed, filiform; claws simple.

This family contains but four genera, of which one, Atractocerus, has not yet occurred in our fauna, but may be expected in Arizona or Texas, as I have already seen specimens from Chihuahua. A species of Lymexylon is very destructive to ship timber in northern Europe, but no danger is to be apprehended from our species, which is very rare. The genus Hylocoetus is remarkable for having a small deep line at the middle of the vertex.

Abdomen with six ventral segments, elytra entire.	**Hylocoetus.**
Abdomen with five ventral segments, elytra entire.	**Lymexylon.**
Elytra shorter than the abdomen; size very small.	**Micromalthus.**

One species of each genus occurs in the Atlantic region.

FAM. L.—CIOIDAE.

Mentum trapezoidal, corneous; ligula without paraglossæ; palpi short, 3-jointed.

Maxillæ exposed at the base, with two flattened, ciliated lobes; palpi short, 4-jointed.

Antennæ inserted at the anterior margin of the eyes; 8–10-jointed, with the last three joints larger, forming a loose club; 11-jointed and pectinate in Rhipidandrus.

Head with the epistoma usually margined, but not in Rhipidandrus; labrum distinct; mandibles short in our genera; clypeal suture distinct; eyes rounded, somewhat coarsely granulated.

Prothorax with the lateral margin distinct; cylindrical, rounded in front, and frequently prolonged over the head; occasionally toothed or horned; coxal cavities small, separate, narrowly closed behind.

Mesosternum short, triangular; side pieces scarcely extending to the coxæ.

Metasternum large; side pieces narrow, linear.

Elytra entirely covering the abdomen; epipleuræ narrow.

Abdomen with five free ventral segments, the first longer than the others.

Anterior and middle coxæ oval, not prominent, without trochantins; hind ones transverse, separated.

Legs moderately short; tibiæ either dilated and serrate, or linear, spurs not distinct; tarsi 4-jointed, joints 1–3 very short, equal, 4th long, with simple claws.

Very small insects, found under bark of trees, and in the dry and woody species of fungus, such as Polyporus. They are usually gregarious. In some of the species the head and the anterior margin of the thorax are in the male ornamented with horns.

Our genera are four in number, all having the tarsi free, not received in tibial grooves.

Antennæ 10-jointed, tibiæ not serrate.	**Cis.**
Antennæ 9-jointed.	**Ennearthron.**
Antennæ 8-jointed, tibiæ not serrate.	**Ceracis.**
Antennæ 11-jointed; joints 5–11 forming a large pectinate mass; elytra sulcate.	**Rhipidandrus.**

The last two genera are not yet represented in the Pacific fauna. Rhipidandrus *Lec.* has been described as *Eutomus* Lac., and placed in Scolytidæ. It has a deceptive resemblance to Eledona.

FAM. LI.—SPHINDIDAE.

Mentum trapezoidal, corneous; ligula coriaceous, wide, paraglossæ small, labial palpi short, widely separated at base, 3-jointed, last joint cylindrical, truncate at tip.

Maxillæ exposed at base, with two ciliate lobes; palpi short, 4-jointed, last joint narrower than the 3d, cylindrical.

Antennæ inserted near the front margin of the eyes, which are convex; 10-jointed, the 1st large and stout, 3-7 slender, small, 3d as long as the two following, 8–10 forming an oval, perfoliate club, as long as the stem, of which the 1st joint is small, 2d quadrate, and 3d longer and larger; in repose they are folded along the prosternal suture, with the club flexed suddenly outwards, behind the front leg.

Head short, prolonged in front into a short broad muzzle, clypeal suture transverse, usually deep; labrum distinct.

Prothorax truncate before and behind, with distinct side margin; side pieces not separate from the notum, flanks concave for reception of the antennæ, or flat; prosternal sutures deep, widely distant; prosternum truncate behind; coxal cavities separated by the prosternum, narrowly closed behind.

Mesosternum slightly declivous; side pieces, attaining the coxæ, broadly truncate behind.

Metasternum long, rounded in front at the middle; side pieces narrow.

Elytra entire, epipleuræ narrow, not extending to the tip.

Abdomen with five free ventral segments, the 1st larger.

Front coxæ transverse, small, not prominent; middle coxæ distant, transverse, not prominent; hind coxæ transverse, separated, not prominent, not excavated for the reception of the thighs, cut off externally by the side pieces of the metasternum.

Legs moderate, tarsi shorter than the tibiæ, the front and middle 5-jointed, the posterior 4-jointed, joints 1–4 short, fifth as long as the others united; claws small, simple.

This family contains a few small species, and is of difficult location, as the affinities seem to be equally divergent in a Clavicorn and Serricorn direction. It seems to be related to the Cioidæ, and would follow them wherever placed. They are found in dry fungi, especially Lycoperdiaceæ, which grow on the trunks of trees.

Our three species, all from the Atlantic States, indicate three genera: Sphindus occurs also in Europe, and Odontosphindus in California.

Body glabrous, sides of prothorax with six or seven teeth; flanks not concave for reception of antennæ. **Odontosphindus.**

Body finely pubescent; sides of prothorax entire; flanks slightly concave. **Sphindus.**

Body broadly oval, clothed with erect hairs; sides of prothorax entire, flanks deeply concave. **Eurysphindus.**

FAM. LII.—LUCANIDAE.

Mentum large, corneous, quadrate, rarely (Passalus) deeply emarginate; ligula usually placed behind the mentum.

Maxillæ usually covered, with two lobes, the inner one usually, the outer one sometimes, with a fixed corneous terminal hook.

Mandibles frequently very large.

Labrum frequently connate with the epistoma; clypeal suture wanting.

Antennæ inserted under the margin of the front, before the eyes, usually geniculate, 10-jointed; the first joint very long in the first tribe, moderate in the second; the outer ones prolonged internally, forming a pectinate club, the joints of which cannot be brought closely together.

Prothorax with the side pieces not separate; coxal cavities separated by the prosternum, transverse, closed behind.

Mesosternum short, separating the coxæ; side pieces large, diagonally divided; epimera attaining the coxæ.

Metasternum large, closely connate with the mesosternum in front, receiving the apex of the first ventral segment in a minute emargination behind; side pieces narrow; epimera nearly concealed by the elytra.

Elytra rounded at tip, covering the abdomen.

Abdomen with five free ventral segments; the sixth (internal) slightly prominent in Platycerus; spiracles situated in the membrane between ventral and dorsal segments, but different in position in the two tribes; in Lucanini they are at the bottom of the lateral concavity of the dorsal surface of the abdomen; in Passalini they are situated on the crest of the margin.

Legs fossorial; anterior coxæ large, transverse, not prominent, without trochantin; middle coxæ usually transverse, sometimes nearly rounded; posterior coxæ transverse, flat;

trochanters not prominent internally; anterior tibiæ more or less toothed externally, frequently palmate, with one terminal spur; middle and posterior tibiæ with two external teeth, terminal dilatation, and two spurs; tarsi slender, 5-jointed, last joint long; claws simple, with a short intermediate onychium bearing two bristles.

The insects of this family live on the juices of decomposing wood, and are very closely allied to the Scarabæidæ; the principal distinguishing character is that the outer joints of the antennæ, though somewhat lamellate, cannot be placed closely so as to form a compact club. In the position of the abdominal spiracles the tribe Lucanini resembles the first sub-family of the Scarabæidæ, in which alone occur tribes with the pygidium entirely covered by the elytra, as in the present family. In fact, for a distinguishing character from some of the tribes, reliance must be had on the large size of the mentum, and the form of the antennal club.

They form two tribes, distinguished by the form of the mentum and position of the ligula. Those portions of the body in the second tribe recall strikingly the form already seen in the Carabidæ, with which, however, the insects have no other resemblance.

Mentum entire, ligula behind or at the apex of the mentum.	LUCANINI.
Mentum deeply emarginate, ligula filling the emargination.	PASSALINI.

Tribe I.—LUCANINI.

Ligula membranous or coriaceous, usually behind the mentum, which is entire; mandibles without a basal molar tooth, usually elongated in the males; external lobe of the maxillæ unarmed, penicillate; labrum connate in the first sub-tribe, free in the other two; scutellum between the elytra; middle coxæ somewhat transverse.

The species are usually large oblong insects, glabrous above, sometimes cylindrical.

Sub-tribes, all having the thorax not closely applied to the elytra, are represented in our fauna as follows:—

Ligula and maxillæ covered by the mentum;	
Anterior coxæ approximate; antennæ geniculate.	LUCANINI.
Anterior coxæ contiguous; antennæ straight.	CERUCHINI.
Ligula and maxillæ not covered; antennæ straight.	SINODENDRINI.

Sub-Tribe 1.—**Lucanini** (genuini).

The typical genus is represented by three large species from the Atlantic States, one of which (*L. elaphus*), by the very long mandibles of the male, resembles the stag-beetle of Europe; and one from New Mexico. Of Dorcus two species are found in the Atlantic States; of Platycerus, we have two eastern species, and two from California and Oregon; the mandibles of *P. Agassii* are short in both sexes. The genera are thus distinguished:—

Eyes strongly emarginated by the margin of the head;	
Anterior tibiæ toothed on the outer edge.	**Lucanus.**
Anterior tibiæ serrulate.	**Dorcus.**
Eyes almost entire; sixth ventral segment visible.	**Platycerus.**

Sub-Tribe 2.—**Ceruchini.**

One genus is represented in our fauna, Ceruchus, of cylindrical form, with the head and mandibles of the male elongate. There are three species, *C. piceus* from the Atlantic region, *C. striatus* and *C. punctatus* from Oregon.

Sub-Tribe 3.—**Sinodendrini.**

This sub-tribe consists of but a single genus, Sinodendron, of cylindrical form; the male has the head armed with a long horn, and the anterior part of the thorax suddenly declivous; the mandibles are short in both sexes; the eyes are not emarginate; the maxillæ and ligula are not concealed by the mentum.

S. rugosum Mannh. inhabits California and Oregon.

Tribe II.—**PASSALINI.**

Ligula large, corneous, filling a quadrate emargination of the mentum; antennæ straight, first joint of moderate length; mandibles with a basal molar tooth, and an anterior movable one; maxillæ with both lobes hooked; labrum not connate; scutellum in front of the base of the elytra; middle coxæ nearly globular.

This tribe contains but a single genus, of which many species exist in the warmer parts of the earth; it is represented in our fauna by but one, *Passalus cornutus*, an elongate, somewhat flattened, shining beetle, of large size, having the head armed with a short bent hook, and the elytra deeply striate. It is quite frequently seen in old stumps of trees.

FAM. LIII.—SCARABÆIDAE.

Parts of the mouth variable in form.

Antennæ inserted under the sides of the front, before the eyes, 7- to 11-jointed, usually 10-jointed, the external joints, usually three in number (sometimes as many as seven), prolonged internally, forming a club of lamellæ, which may be brought close together; first joint always elongated, second thicker than the third.

Prothorax with the side pieces not separate; anterior coxal cavities transverse, very large, closed behind.

Mesosternum short, frequently very narrow; side pieces attaining the coxæ, except in Trogini.

Metasternum large; side pieces variable in form.

Abdomen with six, rarely five, ventral segments.

Legs fossorial; anterior coxæ large, transverse, sometimes subconical and prominent, sometimes not prominent; middle coxæ large, transverse, not prominent; posterior coxæ flat, transverse; anterior tibiæ palmate, toothed, with a single terminal spur; middle and posterior tibiæ variable in form, with two spurs, except in Coprini, where there is a single one; but in two species of Canthon the hind tibiæ have two spurs; tarsi 5-jointed, the anterior ones sometimes wanting; claws generally equal, rarely wanting, usually with an intermediate bisetose onychium.

A very large and distinctly limited family of insects, the members of which exhibit great variations in the form and arrangement of the various organs of the body, while preserving a characteristic appearance, and, conjoined with it, the lamellate antennal club and the fossorial legs.

For reasons mentioned in the prefatory remarks to Dr. Le Conte's synopsis of the Melolonthidæ of the United States,* we prefer dividing the family into three sub-families, according to the position of the abdominal spiracles. Erichson and Lacordaire establish but two sub-families, while Burmeister arranges the genera in a totally different manner.

I. Abdominal spiracles situated in the membrane connecting the dorsal and ventral corneous plates, the last one covered by the elytra. Ligula always separate from the mentum (larvæ with the lobes of the maxillæ separate). LAPAROSTICTI.

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* Journ. Acad. Nat. Sci., 2d ser., iii. 225.

II. Abdominal spiracles in part situated on the superior portions of the ventral segments, the last one usually visible behind the elytra; the rows of spiracles feebly diverging. Ligula sometimes free, usually connate with the mentum. MELOLONTHIDÆ.

III. Abdominal spiracles (except the anterior ones) situated in the dorsal portion of the ventral segments, forming rows which diverge strongly; last spiracle usually visible behind the elytra. Ligula always connate with the mentum (larvæ with the lobes of the maxillæ connate). PLEUROSTICTI.

Sub-Family I.—SCARABÆIDAE LAPAROSTICTI.

Besides the characters given by the position of the abdominal spiracles in the membrane connecting the ventral and dorsal segments, and the ligula separate from the mentum, these insects, or at least a portion of them, exhibit characters not found in the other families.

In many of them the upper surface of the head is much dilated on the front and sides (but never reflexed, as in most Melolonthidæ); the clypeal suture is distinct, and ascends towards the vertex, forming an angle; the mandibles are usually thin plates, frequently membranous, small, and invisible, except on dissection; sometimes, however (Geotrupes, etc.), they are well developed. In some of the genera the antennæ are 11-jointed. The club of the antennæ consists of but three joints, except in Pleocoma, and in some the first joint of the club is hollowed out so as to receive the second or even the last joint. The tarsi are armed with simple claws in all of our genera, except Phanæus, where the claws are wanting; in some genera of Coprini the anterior tarsi are wanting. The usual bisetose onychium is wanting in Acanthocerini, Trogini, Aphodiini, and some Coprini.

The arrangement of this sub-family is adopted nearly as in Lacordaire's work, with the exception of the removal of the tribe Glaphyrini to the next sub-family, and the establishment of two new tribes.

The species all live on decomposing matter, most of them in excrements, and a few in fungi.

The tribes are as follows:—

Abdomen with six visible ventral segments;
  Antennæ 9- or 10-jointed (club always 3-jointed);
    Posterior tibiæ with a single spur. COPRINI.
    Posterior tibiæ with two spurs;

Epimera of metathorax covered;
Antennæ 9-jointed. APHODIINI.
Antennæ 10-jointed. ORPHNINI.
Epimera of metathorax visible. HYBOSORINI.
Antennæ 11-jointed;
Club 3-jointed, mandibles and labrum prominent. GEOTRUPINI.
Club many-leaved, mandibles and labrum small. PLEOCOMINI.
Abdomen with five visible ventral segments;
Epimera of mesothorax attaining the oblique coxæ;
Body contractile, legs broad. ACANTHOCERINI.
Body not contractile, legs normal. NICAGINI.
Epimera of mesothorax not attaining the rounded coxæ. TROGINI.

Tribe I.—**COPRINI.**

These insects are of rounded form, and live almost exclusively in excrements. The clypeus is expanded so as to cover entirely the oral organs; the lobes of the maxillæ are large, ciliated, and of a membranous or coriaceous structure; mandibles lamelliform, principally membranous, with only the outer margin corneous; the mentum is emarginate; antennæ 8- or 9-jointed, club 3-jointed; epimera of metathorax covered; mesosternum very short; middle coxæ oblique, widely separated; posterior tibiæ with a single terminal spur, except in *Canthon indigaceus* and *nigricornis*, where the hind tibiæ have two; tarsi usually without the bisetose onychium; elytra subtruncate, leaving the pygidium exposed; ventral segments six, all connate.

It is in this tribe alone that species occur in which the anterior tarsi are wanting in the females, or in both sexes; the claws of the tarsi are also sometimes wanting. Organs of stridulation are found on the dorsal surface of the abdomen of certain species.

According to the form of the posterior tibiæ, two sub-tribes are indicated.

Middle and posterior tibiæ slender, curved, scarcely enlarged. ATEUCHINI.
Middle and posterior tibiæ dilated at the extremity. COPRINI.

Sub-Tribe 1.—**Ateuchini.**

These species deposit their eggs in balls which they construct of the materials on which they live, and roll these balls to a considerable distance, a labor for which their long, slender, and slightly curved posterior tibiæ fit them. The head and thorax never bear horns, and the sexes are alike in appearance, except in *Deltochilum gibbosum*, where the elytra of the male are each armed with a large dorsal tubercle. The anterior coxæ are slightly prominent internally. The onychium between the claws is wanting.

Our genera are but two in number, and each represents a separate group of this sub-tribe; the groups of genuine Ateuchi and Minthophili not occurring in our fauna.

Epipleuræ of the elytra narrow, or wanting; anterior tarsi distinct.
Group I. GYMNOPLEURI.
Epipleuræ distinct, narrow; scutellum none. **Canthon.**
Epipleuræ of the elytra wide; anterior tarsi wanting.
Group II. DELTOCHILA.
Anterior tibiæ not prolonged at the extremity. **Deltochilum.**

Sub-Tribe 2.—**Coprini** (genuini).

The gradually thickened middle and hind tibiæ unfit these insects for transporting the balls of material which serve for the food of the larvæ; though some of the species do construct balls, they bury them in the place where they are formed. The sexual differences are frequently strongly marked, the male having horns on the head or thorax. The epipleuræ are always narrow, and the first joint of the tarsi is elongated. The anterior tarsi are wanting in some species of Phanæus, and the claws are all wanting in the same genus.

The following groups are represented in our fauna:—

Third joint of labial palpi distinct;
Anterior coxæ very transverse, not prominent. SCATONOMI.
Anterior coxæ short, prominent; labial palpi dilated. COPRES.
Third joint of labial palpi obsolete. ONTHOPHAGI.

Group I.—**Scatonomi.**

Our only representative of this group is Chœridium, containing two moderately small, convex, shining, bronzed black species found in dung They resemble Hister, with finely striate elytra. The 3-jointed labial palpi, and the transverse, not prominent, anterior coxæ, readily distinguish it from the other groups. The claws are small, without onychium, but the tip of the last joint of the tarsi is prolonged beneath into an obtuse process one-half as long as the claws.

Group II.—**Copres.**

The labial palpi are 3-jointed, broad, and compressed; the anterior coxæ are conical, large, and prominent. The last joint of the tarsi has no onychium, and in one genus the claws are wanting; in Copris the claws are small, and the inferior portion of the joint is prolonged into a process as long as the claws. The anterior tarsi are wanting in Phanæus; and in one genus, Dendropæmon, from Brazil, the tarsi have only two joints.

Our genera are but two; neither is represented on the Pacific coast.

First joint of antennal club not receiving the others; metasternum rectangular; claws distinct; front legs with tarsi. **Copris.**
First joint of antennal club hollowed, receiving the others; metasternum rhomboidal; claws wanting; front legs without tarsi. **Phanæus.**

In both of these genera sexual characters are usually obvious in tubercles and horns on the head and thorax. The species of Phanæus are brilliantly colored, and *P. carnifex*, with its rough copper-colored thorax and green elytra, is familiar to every collector.

Group III.—**Onthophagi.**

Several species of Onthophagus from the Atlantic slope, and one Oniticellus from California represent this group.

The anterior coxæ are large, conical, and protuberant; the labial palpi are but 2-jointed, the third joint being obsolete; the tarsal claws are distinct, and the onychium is long, with the two usual setæ.

In some of the species the head or thorax of the males is armed with horns.

The genera are thus distinguished:—

Antennæ 9-jointed; scutellum invisible. **Onthophagus.**
Antennæ 8-jointed; scutellum distinct. **Oniticellus.**

Tribe II.—APHODIINI.

Species of small size, and oblong, convex, or cylindrical form, living chiefly in excrements. The clypeus, as in Coprini, is dilated so as to cover the oral organs, but in one genus, Ægialia, they are visible beyond the apex of the clypeus; the maxillæ and mandibles are variable in form; antennæ 9-jointed, club 3-jointed; epimera of metathorax covered; middle coxæ oblique, contiguous in our genera; posterior tibiæ with two spurs; elytra covering the pygidium entirely or in part; ventral segments six, all free; tarsi with distinct claws and small bisetose onychium.

The sexual characters are often wanting, when present will be found in the form of the tibial spurs of the front and middle legs. In one set of species of Aphodius the first joint of the posterior tarsus ♂ is curiously hooked.

The following genera occur in our fauna:—

	Mandibles concealed beneath the clypeus.	2.
	Mandibles visible beyond the clypeus.	**Aegialia.**
2.	Hind tarsi with elongate, usually cylindrical joints.	3.
	Hind tarsi with triangular joints.	**Psammodius.**
3.	Head roughly granulate, or verrucose; prothorax transversely grooved.	4.
	Head punctured or slightly plicate.	5.
4.	Prothorax not fimbriate, grooves short, lateral.	**Pleurophorus.**
	Prothorax with scale-like marginal hairs, grooves entire.	**Rhyssemus.**
5.	Prothorax never broader than elytra.	6.
	Prothorax at base broader than elytra, hind tibiæ with apical angle spiniform.	**Euparia.**
6.	Outer apical angle of hind tibiæ obtuse.	7.
	Outer apical angle of hind tibiæ prolonged spiniform.	**Atænius.**
7.	Front tibiæ strongly toothed on the outer margin.	8.
	Front tibiæ with upper teeth obsolete, terminal tooth anterior.	**Dialytes.**
8.	Elytra with costiform interspaces.	**Oxyomus.**
	Elytra simply striate.	**Aphodius.**

The species formerly placed in Euparia, with the exception of *castanea*, belong to Atænius.

Tribe III.—**ORPHNINI.**

Oval, convex species, of brown color, covered above with short erect hair; the elytra are striate; the mandibles and labrum are corneous, not covered by the clypeus, which is not dilated as in the two preceding tribes; antennæ 10-jointed, club 3-jointed, somewhat rounded; anterior coxæ prominent; middle coxæ oblique, contiguous; epimera of the metathorax covered; ventral segments six, not connate; tarsi with a small setigerous onychium.

Our species are moderately numerous, and are found from the Mississippi westward to Arizona and Nevada, and are nocturnal in habits, being attracted by lamps. Ochodæus is distinguished from the other genera of the tribe by the eyes being not emarginate. The method of life is unknown.

Tribe IV.—HYBOSORINI.

The mandibles and labrum are corneous, prominent; antennæ 10-jointed, the club 3-jointed, the first joint hollowed and receiving the second; anterior coxæ conical, prominent; middle coxæ oblique, contiguous; epimera of the metathorax visible; ventral segments six, all but the last connate. Tarsi with a short bisetose onychium.

Mandibles narrow, falciform.	**Hybosorus.**
Mandibles wide, outer edge angulated; spurs of hind tibiæ short, broad, and obtuse; claws simple (♀ only?).	**Pachyplectrus.**

In the second genus the middle and hind tibiæ are much thicker than in Hybosorus, and have, like it, one very strong transverse ridge on the outer side.

Hybosorus arator is common to the Southern States and Europe. Pachyplectrus is Californian.

Tribe V.—GEOTRUPINI.

Insects of rounded convex form, some living in excrements, others found wandering about without visible means of support; the elytra strongly striate in nearly all; the thorax of some males, and more rarely the head, armed with horns or tubercles.

The mandibles and labrum corneous, prominent; antennæ 11-jointed, club 3-jointed, variable in form; anterior coxæ prominent; middle coxæ more or less oblique, usually contiguous, but sometimes separated; epimera of the metathorax visible; ventral segments six, free; the elytra cover the pygidium; tarsi with a bisetose onychium.

With the exception of one species each of Odontæus and Geotrupes from California, our species are all found east of the Rocky Mountains.

Club of antennæ large, lenticular;	
Middle coxæ separated.	**Bradycinetus.**
Middle coxæ contiguous;	
Eyes partially divided.	**Bolbocerus.**
Eyes entirely divided.	**Odontæus.**
Club of antennæ lamellate.	**Geotrupes.**

Tribe VI.—**PLEOCOMINI.**

This tribe contains four Californian species, of moderately large size, black, rounded, not very convex, with the body, parts of the mouth, and legs clothed with very long hair. The elytra are irregularly punctured, and the head is armed with a perpendicular horn between the eyes, and the front is prolonged and bifurcated; above the insertion of the antennæ is an acute lobe. The antennæ have eleven joints, of which the last 5–7 form a large lamellated mass, varying according to species; the labrum is elongated, rounded at the apex, and deflexed. The mandibles are pyramidal and short; the inner lobe of the maxillæ is very small, and hooked at the tip; the outer one is larger, but still small, rounded at tip, and hairy; the maxillary palpi are long and slender, the second joint equal to the third and fourth, the third being only half as long as the fourth. The mentum is nearly semicircular; the ligula is entirely concealed by the base of the labial palpi, which are moderate in length, the third joint being as long as the first and second together. The anterior coxæ are large, conical, prominent; the middle ones contiguous, prominent, conical, oblique; the elytra cover the pygidium almost entirely. The anterior tibiæ are 3-toothed, and have two small teeth above the upper tooth; the middle and hind tibiæ are expanded at tip, and have two acute teeth placed transversely about the middle on the external surface. The tarsi are longer than the tibiæ, and slender, the joints 1–4 equal, the fifth longer than the two preceding; the claws slender, with a narrow bisetose onychium. Ventral segments free, the sixth retracted within the fifth. The females are much larger than the males, heavy robust insects with very short antennæ, thick legs and short tarsi: they are rarely seen, and are subterranean in habits. Of the males, Mr. Schaufuss-Blüthner writes, that they are frequently washed out of the burrows of the common Spermophile of California, by the heavy rains of the latter part of winter, but that he has found only three females. The larva, from a specimen collected by Mr. Blüthner, has been described by Baron R. Osten Sacken, and its characters entirely confirm the opinion already expressed regarding the relations of the genus.

Tribe VII.—**ACANTHOCERINI.**

Mandibles and labrum corneous, prominent; antennæ 9- or 10-jointed, club 3-jointed; anterior coxæ conical, prominent; middle coxæ transverse, contiguous; epimera of the mesothorax attaining the coxæ; epimera of the metathorax covered; ventral segments five, not connate; body contractile into a ball; pygidium entirely covered by the elytra; tarsi with slender claws and no onychium.

Oval, convex, smooth, shining insects, living under bark and in rotten wood. They have been considered by Lacordaire and previous authors as forming a sub-tribe of Trogini; but the difference in the side pieces of the mesothorax, which extend to the coxæ, as in all other Scarabæidæ, requires them to be separated. Other differences are found in the large size of the scutellum, and the tarsi fringed with long hairs.

Our genera are two, both having 10-jointed antennæ:—

Body partially contractile; middle and posterior tibiæ thick. **Clœotus.**
Body perfectly contractile; middle and posterior tibiæ compressed. **Sphæromorphus.**

Two species of the first genus, and one of the second, are found in the Atlantic States.

Tribe VIII.—**NICAGINI.**

Nicagus obscurus (*Ochodæus obscurus* Lec.) is the only member of this tribe known. It is an oval, convex insect, more than a quarter of an inch long, brown, densely punctured, and covered with very short pale hair. It resembles in appearance some of the Sericæ, or a nearly smooth Trox. It is found throughout the Atlantic district.

The head is rounded, moderately convex, the front finely margined; the labrum is broadly rounded, hairy; the mandibles short, pyramidal, not very prominent; the mentum is thick, triangular, hairy, pointed in front; the palpi short, the last joint oval. The antennæ are 10-jointed, the club 3-jointed, longer in the male than in the female. The anterior coxæ are large, conical, prominent; the middle ones nearly contiguous, oblique; the epimera of the mesothorax attain the coxæ. The elytra cover the pygidium. The abdomen has five free ventral segments. The legs are normal in form; the anterior tibiæ are 4-toothed, the middle and hind ones gradually thickened towards the tip in the female, but slender in the male, with one small sharp tooth and some small denticles on the outer face; the spurs of the hind tibiæ are acute in the male, obtuse in the female; the tarsi are long and slender in the male, but shorter and stouter in the female; the onychium is narrow, and bears two long bristles, as in Lucanidæ.

We have been very much at a loss where to place this curious insect. The joints of the club of the antennæ do not appear to be capable of being brought into absolute contact, as in other Scarabæidæ, and the club therefore appears pectinate. It was, therefore, reasonable to consider it as allied to the European Æsalus, among the Lucanidæ, which genus it resembles somewhat in form; but the small size of the oral organs, and the triangular mentum, have induced us rather to place it as a tribe of the Laparostict Scarabæidæ, and the position here given it well corresponds both with its external form and Melolonthine sexual characters.

Major Parry and Mr. Deyrolle are inclined to place Nicagus in the family Lucanidæ, as an ally of the New Zealand Mitophyllus. It is figured, with some details of structure, in Trans. Ent. Soc. London, 1873, pl. v. fig. 8: on p. 345 of the same volume, may be found its complete bibliography. Mr. Westwood expressed the opinion (ibid. 1870, ix.) that it was not a Lucanide, but was doubtful to what tribe of Scarabæidæ it belongs. On reviewing the subject, we adhere to the opinion expressed in the first edition of this work, that it represents a district tribe near Trogini. Observations of its habits are in accordance with this view, since it has been found at Gloucester, N. J., near Philadelphia, flying near the ground, in the vicinity of the heaps of putrid Unios drawn up in the nets of the fishermen.

Tribe IX.—**TROGINI.**

Mandibles and labrum corneous, prominent; antennæ 9- or 10-jointed, club 3-jointed; anterior coxæ rounded, subconical, prominent; middle coxæ nearly round, not oblique, contiguous; epimera of the metathorax covered; epimera of the mesothorax widely separated from the coxæ by the sternum; ventral segments five, not connate; abdomen covered by the elytra; tarsi with moderate claws, but no onychium.

The insects of this tribe are oblong, convex species, living in dried decomposing animal matter. The feet are scarcely fossorial in form; the surface is usually rough, and covered with a crust of dirt, removed with great difficulty. Our species are numerous, and belong to the genus Trox. The larger species having the sides of the thorax not ciliate with hairs, were placed by Erichson as a separate genus, Omorgus; but the characters, as observed by Lacordaire, are indefinite, and it is not retained.

The genus Trox possesses a distinct stridulating organ; it is an elliptical plate, with pearly reflections, occupying the upper part of the external face of the ascending portion of the first ventral segment, and is covered by the elytra; on the inner surface of the elytra, near the margin, about opposite the metathorax, is an oval, smooth, polished space, which has probably some connection with the stridulating organ.

Sub-Family II.—MELOLONTHINÆ.

This sub-family holds an intermediate position between the Laparosticti and Pleurosticti. The second pair of abdominal spiracles is placed in the membrane connecting the ventral and dorsal segments, as in other Scarabæidæ; in most species the third, and sometimes the fourth, at the outer limit of this membrane; the fifth and sixth pairs are in the dorsal portion of the ventral segments, but the lines connecting them do not diverge strongly, as in the Pleurosticti; the seventh or last pair is usually visible behind the elytra, but variable in position; in other species, forming the first two tribes, however, the spiracles are placed as in the Laparosticti, all being in the connecting membrane.

The clypeus is usually prolonged and margined in front, so that the mouth is inferior, but in Glaphyrini the mandibles and labrum are prominent; the mandibles are corneous, short, pyramidal; the mentum large, quadrate, with the ligula usually corneous and connate with the mentum, though sometimes free and membranous, as in the Laparosticti; the clypeal suture is usually distinct, transverse; the antennæ have from seven to ten joints, and the club is always lamellate, sometimes consisting of six or five, but usually of three joints, and is frequently longer in the males; the tarsi are always perfect, 5-jointed, with the claws variable in form, and the bisetose onychium is present in all the tribes except Hoplini.

The species feed exclusively on living vegetable matter, and it will be seen that the distinctions between it and the other sub-families are of a negative character; the posterior spiracles do not diverge strongly, as in the Pleurosticti; the middle coxæ are not oblique, as in the Laparosticti (except Trogini), nor rounded and separated from the side pieces, as in that tribe. There is also a considerable difference in the adaptation of the last abdominal segments. In Melolonthinæ the fifth ventral is most frequently connate with the penultimate dorsal, and the sixth segment, usually visible, is rendered so merely by its size and firm consistence causing it to be pushed out into view. Even when the fifth ventral is not connate with the dorsal segment, they form together a regular ring.

In the preceding sub-family the sixth ventral segment is normally visible, although sometimes of small size and retracted; in this case the pygidium or last dorsal segment is covered by the elytra, and in a manner lies upon the fifth ventral; the fifth ventral is never connate with the penultimate dorsal, and does not form with it a regular ring.

In the first tribe of Melolonthinæ (Glaphyrini) the sixth ventral is quite visible, and the fifth is not connate with the penultimate dorsal, but still they are adapted together so as to form a regular ring, to which is articulated the protuberance formed by the pygidium and sixth ventral, in the same position as in Melolonthinæ of other tribes in which the sixth ventral segment is external.

According to the position of the abdominal spiracles, the tribes of this sub-family divide into two sets.

A. LAPAROSTICT MELOLONTHINÆ.

Two tribes form in this division, and only differ from the tribes of the preceding sub-family by individual peculiarities of moment, though by no general character.

Mandibles and labrum prominent; ventral segments six, free. GLAPHYRINI.

Mandibles and labrum beneath the clypeus; ventral segments connate. ONCERINI.

Tribe I.—GLAPHYRINI.

Oblong, not convex insects, frequenting flowers, and remarkable for the long hairs of the legs and under surface; the head and thorax are also usually densely covered with long hair. The elytra are flat, frequently dehiscent, and do not cover the pygidium; the abdominal spiracles are all situated in the connecting membrane; the fifth ventral joins the propygidium, to form a ring, but is not connate with it, as in the genuine Melolonthinæ; the sixth ventral is somewhat triangular, and unites with the pygidium to form a freely moving conical mass. The epimera of the mesothorax are very large; the metasternum is short; the side pieces broad, with the epimera large; the anterior coxæ are large, prominent; the middle ones transverse, contiguous; claws long, diverging. Antennæ with 3-jointed club.

The legs and tarsi of these insects are formed as in other Melolonthidæ, and the claws are slightly toothed at base, or simple.

Two genera have been described from the United States, *Lichnanthe* and *Dasydera*, but they do not seem sufficiently distinct from the European Amphicoma.

Tribe II.—ONCERINI.

This tribe corresponds with the group Lasiopodes of the synopsis of Melolonthinæ.* Its characters are very distinct, as follows:—

Anterior coxæ large, prominent, conical; mandibles and labrum beneath the reflexed clypeus; antennæ 9-jointed, short; club small, 3-jointed; abdomen very small, with the ventral sutures entirely effaced, last segment free, conical; pygidium slightly prominent; elytra rounded at tip; epimera of mesothorax small, extending to the coxæ; side pieces of metathorax narrow, epimera covered; legs stout, posterior thighs large; tibiæ thick, conical; tarsi very long; claws diverging, slender, with a small bisetose onychium; front tibiæ without spurs, posterior tibiæ with two spurs.

Clypeus concave, rounded; mentum linear; claws simple. **Podolasia.**
Clypeus flattened, finely margined; claws cleft; mentum elongate, trapezoidal.
  Clypeus incised each side in front, with a transverse suture in front of the eyes. **Oncerus.**
  Clypeus not incised, frontal suture indistinct. **Chnaunanthus.**

Podolasia is found in Texas, Oncerus in California, Chnaunanthus in Arizona and Utah. They are the smallest Melolonthidæ known, and live on flowers. Oncerus resembles in form the European Chasmatopterus, but the clypeus is double as in Diphucrania. Podolasia exactly resembles in appearance Aclopus *Er.*, which, however, has the labrum and mandibles porrected as in the preceding tribe.

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* Journ. Acad. Nat. Sci., 2d ser., iii. 282.

B. Pleurostict Melolonthinæ.

The mandibles and labrum are placed under the clypeus in all of our genera, although prominent in some foreign genera; the posterior pair of spiracles varies in position; in some groups it is external to the suture between the propygidium and the fifth ventral segment, in others it is placed directly on the suture, which in Diplotaxes is almost obliterated. Although the subtribes appear to be quite natural groups, and of equal value, it is difficult, on account of the absence of many typical forms from our fauna, to combine them in such manner as to form well-defined tribes, such as are seen in the previous sub-family; there would appear, however, to be three indicated, which, with their sub-tribes, may be thus tabulated, all represented in our fauna having normally developed oral organs.*

A. Tibiæ with one spur, which is sometimes obsolete; tarsi without onychium, front and middle ones with two chelate, unequal claws, except in one species, where the middle tarsi have but one claw: hind tarsi with a single claw; last spiracle placed on the suture between the fifth ventral and propygidium, which are connate; ventral segments connate; side pieces of metathorax broad. I. HOPLIINI.

Middle coxæ contiguous. 1. Hopliini.

B. Middle and hind tibiæ with two spurs; tarsi with distinct bisetose onychium and equal claws;

a. Last spiracle in the fifth ventral, which is not connate with the propygidium; side pieces of metathorax narrow; ventral segments six, free; anterior coxæ conical, prominent. II. SERICINI.

Labrum separate; claws chelate. 2. Dichelonychini.
Labrum connate; claws not chelate. 3. Sericini.

b. Last spiracle placed on the suture between the fifth ventral and the propygidium, which are closely connate. III. MELOLONTHINI.

Anterior coxæ prominent, conical:
Ventral segments six, not connate;
Hind legs slender. 4. Macrodactylini.
Hind legs thick. 5. Sericoidini.
Ventral segments five, subconnate. 6. Diplotaxini.
Anterior coxæ transverse, not prominent; ventral segments six;
Ventral segments connate. 7. Melolonthini.
Ventral segments not connate. 8. Macrophyllini.

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* In the foreign tribe Pachypodini the oral organs are very feebly and imperfectly developed.

Sub-Tribe 1.—**Hopliini** (genuini).

Oblong, flattened insects, living on flowers, and having the body more or less covered with flat scales of a yellowish, brownish, or silvery color. But one genus, Hoplia, is found in the United States, and is represented by species in every part of our territory; the males frequently differ from the females by color as well as size, and even by the texture of the scales and hair, so that, whenever opportunity occurs, the sexes of the specimens found should be carefully noted.

The sub-tribe is known by the ligula being corneous, and connate with the mentum, as in the other Melolonthinæ of our fauna; by the small scutellum, and by the middle coxæ being nearly contiguous.

The characters of the tribe are: the side pieces of the metathorax are always broad; the club of the antennæ is 3-jointed; the mandibles have an interior plate; the labrum is very short, and concealed under the clypeus; the anterior coxæ are large, conical, and prominent; the tibiæ have but a single very small terminal spur, larger on the middle tibiæ in some females; the claws are chelate and very unequal, and the onychium is entirely wanting; the hind tarsi, and in *H. equina*, also the middle ones have but a single claw; the ventral segments are connate, and the sixth is indistinct; the last spiracle is on the suture between the propygidium and fifth ventral.

Sub-Tribe 2.—**Dichelonychini.**

The genus Dichelonycha alone represents this sub-tribe in our fauna, but is universally distributed. It is distinguished from various foreign sub-tribes having prominent anterior coxæ, distinct labrum, and separate ventral segments, by the ligula connate with the mentum, the large vertical and deeply emarginate labrum, and by the sternum not being prominent. The last spiracle is placed outside of the suture between the propygidium and the fifth ventral segment, which are not connate to form a solid ring.

From Macrodactylini it differs by the position of the last abdominal spiracle; by the claws being chelate, or capable of being folded along the last joint of the tarsi, though they are not usually seen in that position; and by the large, prominent eyes.

First ventral segment in great part visible.	**Dichelonycha.**
First ventral segment nearly hidden by the hind coxæ.	**Cœnonycha.**

They are elongate hairy insects, usually of metallic color, found in large numbers on leaves of trees; the claws are cleft at tip.

Sub-Tribe 3.—**Sericini** (genuini).

This sub-tribe is also represented in our fauna by a single genus, Serica, of universal distribution. They are oblong, convex insects, of a brown color, usually with iridescent reflections; the elytra are indistinctly sulcate; the pygidium is sometimes partly covered by the elytra.

It is readily distinguished from all others of this sub-family by the labrum being connate with the under surface of the clypeus, and therefore indistinct.

The fifth ventral segment and the propygidium are separated by a distinct suture, and the spiracle is placed external to this suture, half way between the anterior and posterior margin of the ventral segment. The posterior coxæ are flat, and broadly dilated.

Sub-Tribe 4.—**Macrodactylini.**

Three species of Macrodactylus, distributed from the Atlantic to Arizona, alone represent this group in our fauna; they are commonly known as rose-bugs, and are very destructive to roses when in bloom. They are elongate, brownish insects, densely covered with ochreous scales, so as to appear yellow; the tarsi are very long; the claws long, slender, diverging, cleft at tip; the fifth ventral segment and propygidium are connate, forming a solid ring, and the last spiracle is placed on the suture. The labrum is not connate with the clypeus; the mentum is narrow, and channelled; the anterior coxæ are conical and prominent; the ventral segments are not connate, and the legs are slender.

Sub-Tribe 5.—**Sericoidini.**

This sub-tribe, as defined by Lacordaire, differs from the others having conical, prominent anterior coxæ, by the labrum being distinct, and the mentum not elongate and channelled, as in Macrodactyli. A portion having chelate ungues has been separated to form the sub-tribe Dichelonychini.

The ligula is connate with the mentum, which is concave; the labrum is short and emarginate; the mandibles not prominent; the epistoma margined in front; the antennæ 10-jointed, the third, fourth, and fifth joints closely connected; the club 3-jointed, elongated in the males; the last spiracle is placed on the suture between the connate fifth ventral and the propygidium; the ventral segments are six, not connate; the legs are stout, the hind femora and tibiæ much thickened; the inner claw of the anterior tarsi, and the outer claw of the middle tarsi (at least of the male), is suddenly and broadly dilated at base into a large rounded prominence.

Epistoma much thickened in front, concavity a curved groove. **Hypotrichia.**
Epistoma normal in form, quadrate, deeply concave. **Plectrodes.**

Hypotrichia spissipes, from Florida, is an oval, elongate insect, half an inch long, of a piceous color, finely punctured above, with the thorax transverse, rounded, covered with short grayish hair; body beneath densely clothed with long hair; elytra finely punctured and pubescent.

Three species of Plectrodes are found in California.

Sub-Tribe 6.—**Diplotaxini.**

Small, oblong, slightly convex species, usually brown, with the elytra most frequently marked with rows of punctures alternately approximate, with the wider spaces irregularly punctured. They are distinguished from all other groups having the anterior coxæ prominent and the side pieces of the metathorax narrow, by the sixth ventral segment not being visible; the fifth and propygidium are closely connate, with the suture indistinct, and the spiracle is placed midway between the anterior and posterior margins; the ventral sutures are distinct in all of our genera, and the apical margin of the thorax is membranous, except in Alobus; the antennæ are 10-jointed, except in Diazus.

Anterior claws with a slightly prominent tooth near the tip; middle and posterior claws cleft. **Orsonyx.**
Claws alike on all the feet;
  Last joint of maxillary palpi oval, somewhat pointed;
    Antennæ 9-jointed; claws entire. **Diazus.**
    Antennæ 10-jointed; claws cleft or toothed. **Diplotaxis.**
  Last joint of maxillary palpi elongate, cylindrical; claws with a very large tooth. **Alobus.**

Sub-Tribe 7.—**Melolonthini** (genuini).

This is the first of the sub-tribes in which the anterior coxæ are not prominent, but simply transverse, and contained entirely in the coxal cavities. It is distinguished from the other sub-tribes having this character, by the labrum being deeply emarginate, and the ventral segments connate, though the sutures are frequently not effaced.

The apical margin of the thorax is never membranous; the fifth ventral segment is connate with the propygidium by an angulated suture, sometimes partly obliterated; the spiracle is placed at the angle of this suture, nearer the posterior than the anterior margin. The genera indicate two groups, distinguished as follows:—

Side pieces of metathorax narrow.	RHIZOTROGI.
Side pieces of metathorax wide.	MELOLONTHÆ.

Group I.—**Rhizotrogi.**

This group is sufficiently distinguished by the labial palpi* being inserted on the under surface of the ligula near the sides. The species are glabrous, or pubescent above; the thorax is margined in front. The side pieces of the metathorax are narrow, with the epimera moderate in size, or small. One spur of the hind tibiæ is frequently connate with the tibiæ in the males, and varies greatly in form according to species. The third joint of the antennæ is not elongated.

The genera are not well defined, and in those having many species considerable variation in the generic characters is seen.

Some of the species of Lachnosterna, known familiarly under the name June bugs, are very abundant, and do much harm by destroying the leaves of fruit-trees.

Claws never serrate, with a single tooth beneath.	**Lachnosterna.**
Claws more or less serrate, sometimes also toothed.	**Listrochelus.**

Listrochelus belongs to the interior of the continent, from Platte River to the Colorado of California. Two species of Lachnosterna are known from California; the others all belong to the Atlantic slope of the continent.

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* For an important note concerning the structure of the ligula and position of the labial palpi in various groups of Melolonthidæ, vide DuVal, Gen. Col. Europe, iii. 44.

Group II.—**Melolonthæ.**

Large species, frequently ornamented with spots or stripes of squamiform hair, and distinguished by the broad side pieces of the metathorax, the epimera of which are large. The fifth ventral segment and the propygidium are connate by an angulated suture, the spiracle is placed exactly at the angle; the thorax has no anterior marginal line.

The club of the antennæ of Polyphylla assumes an enormous development in the male, and consists of six joints; in the female it is smaller.

Two genera are in our fauna, both having a spur on the anterior tibiæ; Polyphylla has universal distribution, Thyce is found in New Mexico.

Antennæ with long third joint; club many-jointed.	**Polyphylla.**
Antennæ with short third joint; club small, 3-jointed.	**Thyce.**

Sub-Tribe 8.—**Macrophyllini.**

The genera of this sub-tribe were known only from Africa, Australia, and Polynesia, until the discovery of *Phobetus* Lec., a Californian genus, allied, apparently, to the South African *Tryssus* Er., the characters of which are very indefinitely made known; but, from the difference of locality, the two genera cannot be supposed to be identical.

The only character by which this sub-tribe is distinguished from the preceding is that the ventral segments are not connate, and the prothorax margined at apex with membrane. The anterior coxæ are a little more prominent, and the side pieces of the metathorax are equally wide.

The generic characters of Phobetus are: antennæ 9- or 10-jointed, varying according to individuals and not species; with the club of the male 3-jointed, as long as the rest of the antenna; labrum transverse, concave, somewhat emarginate; prothorax margined in front, and fringed with membrane; claws with a broad tooth near the tip, and an indistinct one near the base.

The species, *P. comatus*, is robust in form, nearly seven-tenths of an inch long, with the margins of the thorax and body, and the whole of the breast, covered with very long hair; the elytra are glabrous, nearly smooth, with a deep sutural stria.

Sub-Family III.—SCARABÆIDAE PLEUROSTICTI.

In this sub-family the abdominal spiracles are arranged; the second pair in the membrane connecting the dorsal and ventral segments, the third on the outer limit of the membrane, and the others in the dorsal portion of the ventral segments; the last two pairs diverge strongly, and are usually visible on the sides of the abdomen, below the elytra, which do not cover the pygidium. The clypeus is sometimes prolonged, but rarely concave, as in most Melolonthinæ, and in many the mandibles, though always short, project beyond the clypeus. The mentum is sometimes quadrate, sometimes pointed, with the ligula always corneous and connate; antennæ 9- or 10-jointed, with the club 3-jointed, rarely elongated in the males; the epimera of the mesothorax reach the coxæ, and are variable in form; the tarsi are perfect, and the onychium is distinct.

Three tribes, separated by the following characters, exist; in all of them the last spiracle is placed on the suture between the fifth ventral segment and the propygidium, which are closely connate, and is usually nearer the anterior than the posterior margin, though in certain genera of the third tribe the reverse is the case.

Claws of the tarsi unequal.	Rutelini.
Claws of the tarsi equal;	
Anterior coxæ transverse, not prominent.	Dynastini.
Anterior coxæ conical, prominent.	Cetoniini.

Tribe I.—**RUTELINI.**

These insects have entirely the form of certain Melolonthinæ, and are only distinguished from them by the position of the spiracles, and the unequal size of the tarsal claws. In our genera the tarsi are short, with the joints cylindrical and closely connected; the epimera of the mesothorax have in some genera a tendency to ascend between the thorax and elytra, as in Cetonia; the side pieces of the metathorax are narrow, with the epimera visible. The species live on leaves of trees; some are ornamented with metallic colors, and one of them, *Plusiotis gloriosa*, from the copper-mines of the Gila, of a pale green color, with the margins of all the parts of the body and broad stripes on the elytra of a pure polished gold color, is the most beautiful Coleopterous insect known to us.

But two groups are found in our country, and in both the labrum is horizontal, short, and sinuate, and the mentum quadrate.

Elytra with a membranous margin. ANOMALÆ.
Elytra without membranous margin. RUTELÆ.

Group I.—**Anomalæ.**

These insects are of small size, have 9-jointed antennæ, and the mandibles in repose do not project beyond the clypeus. Only two genera occur in our fauna, and neither has yet been found on the maritime Pacific slope of the continent. One of the anterior and middle claws is cleft in all the species, except *A. cavifrons*.

A. Epimera of the mesothorax inferior; elytra not emarginate at base;
  Prosternum not prominent behind the coxæ; clypeus parabolic. **Anomala.**
B. Epimera of the mesothorax ascending; elytra emarginate at base;
  Clypeus parabolic; prothorax sulcate or impressed. **Strigoderma.**

The species of the last-named genus have the elytra flattened and deeply sulcate; but three are included in our territory.

Group II.—**Rutelæ.**

Insects of moderately large size, having 10-jointed antennæ, and prominent mandibles. Our genera belong to three subgroups, Pelidnotæ, Areodæ, and Rutelæ; they may be tabulated thus, all of our species, except *Polymœchus brevipes*, which is allied to Parastasia, having entire simple claws:—

Thorax margined at base;
  Clypeus united with the front without suture. PELIDNOTÆ.
    Mandibles emarginate or bidentate externally. **Pelidnota.**
    Mandibles entire. **Plusiotis.**
  Clypeus distinctly separated from the front. AREODÆ.
    Last tarsal joint not prolonged beneath. **Cotalpa.**
Thorax not margined at base. RUTELÆ.
  Claws entire; clypeus not reflexed. **Rutela.**
  Claws in part toothed; clypeus reflexed and bidentate. **Polymœchus.**

Tribe II.—DYNASTINI.

Insensible transitions through foreign genera connect closely this tribe with the preceding, but those found in our fauna will not produce much difficulty in the mind of the student.

The mentum is usually narrowed and subacuminate in front, rarely truncate. The claws of the tarsi are equal, and simple, except in the male of *Ligyrus relictus*, where the inner claw of the anterior tarsi is thickened, dilated, and suddenly incurved. The labrum, always visible in the preceding tribe, is here almost invisible, and sometimes in part membranous.

This tribe, among its foreign members, numbers the largest Coleoptera existing; some of the genera are remarkable for the size and form of horns on the thorax and head of the males.

Organs of stridulation are found in many genera; they consist of rugose spaces, usually on the propygidium, sometimes on the inner surface of the elytra. The fifth ventral segment and the propygidium are connate, and the spiracle is on the suture nearer the anterior than the posterior margin.

The sub-tribes represented in our fauna are as follows:—

Labial palpi inserted at the sides of the mentum;	
Head and prothorax unarmed in both sexes.	CYCLOCEPHALINI.
Head and prothorax armed, or at least tuberculate, in both sexes;	
Anterior feet of the males not elongated.	ORYCTINI.
Anterior feet of the males elongated.	DYNASTINI.
Labial palpi inserted behind the mentum.	PHILEURINI.

Sub-Tribe 1.—**Cyclocephalini.**

But two genera of this sub-tribe exist in our fauna; they have the appearance of Melolonthinæ, and are readily distinguished from the following sub-tribes by the thorax and head being entirely destitute of tubercles, and by the clypeus being flat, parabolic, and finely margined; the mandibles project but slightly, and are not toothed externally. The males have the fifth joint of the anterior tarsi much enlarged, and the club of the antennæ is sometimes longer than in the female. Stridulating organs none; posterior tibiæ not festooned nor expanded at tip; mentum truncate in front; antennæ 10-jointed (9-jointed only in certain species of Cyclocephala); the thorax is only partially margined at the base; the prosternum is prominent behind the coxæ; the tarsi are cylindrical.

Our two genera have the mesosternum scarcely visible between the middle coxæ; Cyclocephala has the mandibles narrow, scarcely curved; Chalepus has them broad, rounded externally, and curved.

Cyclocephala is generally diffused; Chalepus has not yet been found on the Pacific slope.

Sub-Tribe 2.—**Oryctini.**

The insects of this sub-tribe vary much in size and form, but have the following characters in common:—

Labial palpi inserted at the sides of the mentum; mandibles prominent, usually toothed externally; head more or less tuberculate (except in Strategus), always with some elevations, sometimes armed with a horn; thorax usually tuberculate or horned; anterior feet not elongate in the males; clypeus not parabolic, but rather triangular, reflexed with one or two small apical teeth; mentum narrowed in front; posterior tibiæ expanded at the extremity, sometimes digitate; first joint of hind tarsi more or less elevated at its upper extremity. Stridulating organs are found except in Aphonus.

The sexual characters are usually in the greater development of horns or tubercles in the male, rarely (*Ligyrus relictus*) in the thickening of the outer claw of the anterior tarsi.

Two groups are represented:—

Posterior tibiæ expanded (sometimes but slightly) at the extremity, truncate, and ciliate. PENTODONTES.

Posterior tibiæ digitate or festooned at the extremity. ORYCTES.

Group I.—**Pentodontes.**

Moderate-sized, robust, convex species, having the head slightly tuberculate, or rather, in our species, with small anterior ridges or teeth, alike in both sexes; thorax sometimes with a small acute tubercle near the anterior margin, sometimes entirely uniform, convex.

Three genera occur in our fauna: Ligyrus, generally diffused; Aphonus, from the Atlantic and Central districts.

Front tibiæ digitate;
  Stridulating organs on the inner surface of the elytra; mandibles toothed externally. **Ligyrus.**
  Stridulating organs entirely wanting; mandibles not toothed. **Aphonus.**
Front tibiæ without teeth, rounded at tip. **Orizabus.**

The last genus is founded upon a Mexican species which extends into New Mexico. It greatly resembles in appearance *Aphonus clunalis*.

Group II.—**Oryctes** (genuini).

Large insects, having, in our genera, the mandibles prominent, and sometimes toothed externally, sometimes simple; the middle and hind tarsi expanded at tip, and truncate in some, digitate in others; first joint of hind tarsi elevated. Our genera possess stridulating organs, covering the greater part of the propygidium. The head is horned in the male and tuberculate in the female of Xyloryctes, but has only two very minute tubercles in Strategus. The prothorax of the male of Strategus has usually three horns, though sometimes but one small tubercle in both sexes.

Mandibles not toothed externally.	**Xyloryctes.**
Mandibles strongly toothed.	**Strategus.**

No species has been found west of the Rocky Mountains.

Sub-Tribe 3.—**Dynastini** (genuini).

One species of Dynastes found in the Southern States, one in Arizona, and *Megasoma Thersites* in Lower California represent this sub-tribe in our fauna. The former are of a greenish-gray color, with black spots scattered irregularly over the elytra, the latter is dark brown and pubescent. The characters of the tribe are:—

Labial palpi inserted on the sides of the mentum, which is acuminate in front; mandibles prominent; head armed with horns in the male, tuberculate in the female; thorax horned in the male, simple and not impressed in the female; anterior feet longer in the males. In Dynastes the first joint of the posterior tarsi is not elevated; but in Megasoma it is produced into a spine; there are no stridulating organs.

Prosternal proces large, hairy.	**Dynastes.**
Prosternal process moderate, glabrous.	**Megasoma.**

Sub-Tribe 4.—**Phileurini.**

This sub-tribe, of which we possess but the genus Phileurus, is at once distinguished from the others by the labial palpi inserted behind the mentum. Other characters are: the mandibles prominent; head and prothorax alike in both sexes, the former with two short horns or tubercles, the latter with one tubercule in our species, though not so in certain foreign ones; legs alike in both sexes; hind tibiæ digitate or truncate at tip, not expanded; first joint of hind tarsi elevated; stridulating organs on the inner surface of the elytra, along the lateral margin.

In Phileurus the mentum is of moderate size, oval, slightly emarginate in front, and the first joint of the hind tarsi is prolonged into a spine at the extremity.

Four species are known in our fauna, one of which, *P. valgus*, is also found in South America; of the others, *P. truncatus* inhabits the Southern States, *P. cribrosus* Texas, and *P. illatus* California and Arizona.

Tribe III.—**CETONIINI.**

In addition to the conical prominent anterior coxæ, this tribe is distinguished by the occurrence in it of certain peculiarities not found at all, or only exceptionally, in the other tribes of Pleurosticti.

In the majority of genera the mandibles are feebly developed, and in great part membranous; they and the labrum are always under the clypeus; the antennæ are always 10-jointed, with 3-jointed club; the internal lobe of the maxillæ is obsolete; the elytra do not cover the pygidium, and the epipleuræ are not distinct; the side pieces of the mesothorax are large, and ascend between the thorax and base of the elytra so as to be usually visible from above; the last pair of spiracles is situated on the suture between the connate fifth ventral and propygidium, but is variable in position, being sometimes near the posterior margin, sometimes near the anterior one; the claws are always equal and simple, with a distinct onychium, which, however, is very small in Cremastochilus; the ventral segments are six, not connate, although very slightly movable; the mesosternum is usually prominent between the coxæ; the side pieces of the metathorax are variable in size, but the epimera are always visible. The genuine Cetoniæ, in flying, do not raise or expand the elytra, as most Coleoptera do, but pass the wing out from the side, under the elytra, which do not at all embrace the sides of the body.

Both sub-tribes are found in our fauna:—

Epimera of the mesothorax visible from above.	CETONIINI.
Epimera of the mesothorax not visible from above.	TRICHIINI.

Sub-Tribe 1.—**Cetoniini** (genuini).

The elytra in the genera here placed are always sinuate on the side, and the mesosternum is almost always prominent; the epimera of the mesothorax ascend between the prothorax and elytra, and are visible from above. The foreign genera exhibit an intricate network of affinities, which all the labor of Burmeister and Lacordaire has failed to represent in a synoptic form; our fauna is so limited, however, that our groups may be thus defined:—

Mandibles feeble, in great part membranous; last spiracle midway between the anterior and posterior margin of the segment;	
Prothorax lobed at the base, covering the scutellum.	GYMNETES.
Scutellum not covered by the thorax.	CETONIÆ.
Mandibles with the outer part thickened; last spiracle near the posterior margin of the segment, the suture nearly effaced.	CREMASTOCHILI.

Group I.—**Gymnetes.**

But two genera of this group occur in our fauna: Allorhina having the clypeus armed with a short horn; Gymnetis with the clypeus flat.

Allorhina nitida extends over the Atlantic slope, and is a well-known green, velvety insect, nearly an inch long, somewhat pointed in front, with the sides of the thorax and elytra usually brownish-yellow. Other species will probably be found in our southwestern territories.

Gymnetis Sallei is found in Louisiana, Texas, and Mexico. It is a beautiful velvety, olive-colored insect, of the same form as Allorhina, three-fourths of an inch long, variegated with pale yellow marks, which unite on the margin of the thorax and elytra.

No species of this group has yet been found on the Pacific slope.

Group II.—**Cetoniæ.**

Our species, although arranged by Burmeister in three genera —Euphoria, Erirhipis, and Stephanucha—have been united by Lacordaire with other foreign forms, and for the combined genus he retains the name Euryomia. The views of European authors do not seem to be in accord in the division of the old genus Cetonia, and as the group is not sufficiently represented in our fauna to permit a discussion of the subject, the name Euphoria has been retained as least objectionable.

No species has yet been found on the Pacific slope.

Group III.—**Cremastochili.**

Besides the greater development of the mandibles, and the position of the last spiracle near the posterior extremity of the obliterated suture between the fifth ventral and propygidium, the mentum in our species affects a very unusual form; it is, in fact, a large cup-shaped body, sometimes acute behind, sometimes incised, but passing by gradation from one to the other form. The mesosternum is not protuberant.

The species are elongate, dull black or brown, coarsely punctured insects, with the upper surface flattened, and entirely destitute of the varied colors which render the species of the two preceding groups so ornamental. Our species all belong to one genus, Cremastochilus; the differences in the form of the mentum are very great. Several synopses have been published.

True Cremastochilus, having the mentum deeply concave, and incised behind, is confined to the Atlantic slope, as far as the Platte River; the groups with the mentum pointed behind are distributed from the Platte River to the Pacific Ocean.

Sub-Tribe 2.—**Trichiini.**

These insects are readily distinguished by the side pieces of the mesothorax not rising so as to be visible above, and by the elytra not being sinuate on the sides; the thorax is narrower than the elytra, and usually rounded on the sides, giving the insects a different appearance from those of the preceding sub-tribe; the last spiracle is nearer the anterior than the posterior margin of the segment in Osmoderma, about the middle in Trichius and Gnorimus, and near the posterior margin in Valgus.

No species of this sub-tribe has yet been found on the Pacific slope.

Our four genera may be thus arranged, none having the mesosternum protuberant:—

Posterior coxæ contiguous;
  External lobe of maxillæ corneous. **Osmoderma.**
  External lobe of maxillæ coriaceous, lamelliform;
    Elytra longer than wide, thorax sinuate at base. **Gnorimus.**
    Elytra not longer than wide, thorax rounded at base. **Trichius.**
Posterior coxæ widely separated. **Valgus.**

We have strong doubts whether Gnorimus should be retained as distinct from Trichius.

FAM. LIV.—SPONDYLIDAE.

We would unite under this name all the aberrant Cerambycidæ of Lacordaire, whether classed with the Prionidæ or Cerambycidæ. By Mr. Thomson they have been in part separated as distinct families, under the general name Subcerambycidæ: he has, however, excluded Spondylis from them and retained it with Scaphinus among the Cerambycidæ.

It seems a more natural view to regard them as sub-families (or tribes, as the case may be), having the same relation to each other as the sub-families and tribes of the Cerambycidæ, and representing in the modern fauna the last remnants of the prophetic, synthetic, or undifferentiated* types of a former geological age. They are, therefore, few in number, without very obvious relations with each other, or with the numerous forms of Cerambycidæ, with which they cannot be intercalated, without interrupting the obvious series of relationships.

They may be briefly described as extraordinary forms, differing not only in appearance from other Longicorns, but also by the tarsi being all deprived of the brush of hair beneath; the 3d joint not bilobed, entire or feebly emarginate, the 4th joint frequently well-developed; the antennæ are short, with the scape very short, much constricted at base, inserted at the side of the head near the base of the mandibles, under a more or less developed ridge; 2d joint rather large, though smaller than the 3d. In our two sub-families the poriferous system of the antennæ is contained in deep foveæ, differing in shape according to the genus. The other characters vary, as may be seen by the table in Thomson, Syst. Cerambyc., 312.

Two sub-families exist in our fauna:—

Prothorax margined; labrum connate.	PARANDRIDÆ.
Prothorax not margined; labrum free.	SPONDYLIDÆ.

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* These three appellations will be acceptable according to the metaphysical school to which the reader may belong. We write not to sustain a theory, but merely to present facts in such relation with other facts, as enables them to be most conveniently classified. The result is the same whatever hypothesis be adopted.

Sub-Family I.—PARANDRINÆ.

The body is elongate, parallel, smooth, and shining; head broad, eyes transverse, convex, rather coarsely granulated, feebly emarginate; antennæ extending to the base of the prothorax, in front of the eyes, near the base of the mandibles, under distinct lateral ridges, polished, scape short and thick, strongly constricted at base; 2d joint half as long as 3d; 3–10 equal, subquadrate, constricted at base, flattened, with two deep grooves on the under surface, separated by a convex space, but limited on their outer edge by an acute ridge; 11th joint longer, obliquely truncate and pointed, with the same two grooves, and an apical fovea. Mandibles dentate, longer in ♂ than ♀; labrum pointed, connate with the front; mentum very transverse, closing the buccal fissure, bisinuate in front, ligula corneous very transverse, broadly truncato-sinuate in front; palpi short, labials inserted at the sides of the ligula, widely distant; maxillaries not longer, last joint cylindrical; maxillæ with one very slender and small lobe, sparsely ciliate at tip. Prothorax quadrate, margined at the sides; mesonotum punctured, without stridulating plate, not distinctly separated from the scutellum, which is triangular, rounded at tip. Elytra parallel, margined, rounded at tip; epipleuræ extending to the sutural tip; wings perfect. Prosternum distinct between the coxæ, which are large, not prominent, transverse, and inclosed behind; middle coxæ oval, cavities widely open externally, mesosternum parallel, truncate, or submarginate at tip; hind coxæ not prominent, transverse, extending to the sides of the abdomen; episterna of metathorax parallel, narrow; ventral segments 5, equal, alike in both sexes, intercoxal process acute. Legs rather short, thighs compressed; tibiæ compressed, outer angle acute, spurs rather strong, tarsi slender, without brush beneath; 4th joint half as large as the 3d, 5th as long as the others united, claws strong, paronychium slender, small, with two terminal setæ.

The species of Parandra live under pine bark, and are not very well defined.

The affinities of this genus with Prioninæ are quite apparent, but those with Lucanidæ are equally obvious, with also some tendency towards Cucujidæ in Passandra, Catogenus, etc.

Sub-Family II.—SPONDYLINÆ.

Body elongate, rather convex and robust, punctured, opaque or nearly so; head large, eyes transverse, not convex, rather finely granulate, feebly emarginate. Antennæ short or extending beyond the base of the prothorax, inserted under slight prominences in front of the eyes, near the base of the mandibles; 1st joint oval, stout, a little longer than the 3d; 2d about half as long as 3d, or (Scaphinus) nearly as long; remaining joints equal, transverse (Scaphinus), or oval (Spondylis), each with two foveæ on the under surface, which in the former are very large and deep, in the latter small and near the apex; 11th joint pointed at tip. Labrum small, separate. Mandibles long, slender, not toothed; palpi long, not dilated, last joint oval, truncate; mentum very transverse, buccal fissures wide, filled by the base of the maxillæ; ligula very large, corneous, concave, emarginate in front, with broadly-rounded lobes; labial palpi distant, situated on the inferior surface, but remote from the sides. Maxillæ with very small slender lobes. Prothorax oval, convex, narrowed behind, not margined; mesonotum polished, sparsely punctured, without stridulating plate, broadly channelled, distinctly separated from the scutellum by a transverse excavation. Elytra parallel, rounded at tip, epipleuræ narrow, not extending to the suture; wings perfect.

Prosternum distinct between the coxæ, which are subconical, somewhat prominent, angulated externally, and inclosed behind; middle coxæ oval, cavities widely open externally, with distinct trochantin, mesosternum triangular, slightly truncate at tip; episterna of metathorax rather wide, narrowed behind, hind coxæ large, extending to the side of the abdomen, prominent in Scaphinus, but not in Spondylis. Ventral segments 5, equal, similar in both sexes, intercoxal process acute.

Legs rather short, much stouter in Scaphinus than in Spondylis; thighs thick, compressed; tibiæ compressed, finely serrate, outer angle prolonged into a flange much more developed in Scaphinus; spurs well developed, unequal on the front pair, obtuse and broad on the hind feet. Tarsi short without brush of hairs beneath, though hairy in Spondylis; 3d joint emarginate; 4th small, but distinct; 5th long, with slender, rather large claws, and a very small bisetose onychium.

Spondylis upiformis extends from Alaska to Lake Superior. *Scaphinus sphæricollis* is found in pine woods of the Southern States.

A near approach is said to be made by Spondylis to Asemum; but while recognizing the resemblance, it appears to be a very remote one, and the present form is rather to be considered that which makes the closest approach to the next family, without, however, actually belonging to it.

Fam. LV.—**CERAMBYCIDAE.**

Mentum variable, in Prionidæ usually very transverse and entirely corneous, in the others trapezoidal, more or less transverse, frequently coriaceous at tip; ligula membranous or coriaceous, sometimes (Prioninæ, a few Cerambycinæ, and Methiini of Lamiinæ) corneous; labial palpi 3-jointed.

Maxillæ with two lobes, clothed at the tip with bristles, the inner one obsolete in Prioninæ.

Mandibles variable in form, sometimes (Mallodon ♂, Dendrobias ♂) very long; usually curved and acute at tip, rarely emarginate, or chisel-shaped (Distenia).

Eyes usually transverse, most frequently deeply emarginate, often divided, in which case the upper lobe is sometimes wanting (Tillomorpha, Spalacopsis); either finely or coarsely granulated.

Antennæ variable in position, either in front of or between the eyes, in the latter case frequently on large frontal elevations; usually long and slender, imbricate in Prionus (pectinate in some foreign genera), subserrate or compressed in a few forms, with sensitive surfaces differing in the subfamilies and tribes; usually 11-jointed, sometimes 12–25-jointed (Prionus), very rarely 10-jointed (Methia, Dysphaga).

Prothorax margined in Prioninæ, not margined in any others in our fauna; coxal cavities and coxæ variable.

Mesosternum short, side pieces most frequently attaining the coxæ; sometimes (certain Cerambycinæ and Lamiinæ) cut off by the apposition of the sternal pieces.

Metasternum moderate, or long, short only in apterous Lamiæ (Dorcadioides), and in some subterranean foreign genera; episterna variable; in many Cerambycinæ with an opening for the duct of a scent gland near the inner hind angle.

Elytra usually covering the abdomen, rarely short; epipleuræ usually distinct, rarely (some Phytœciini) indistinct.

Abdomen with five free ventral segments, the sixth visible in many males, and occasionally in both sexes.

Legs variable, usually slender, thighs frequently strongly clubbed, hind coxæ transverse, frequently inclosed externally by prolongation of epimera of metathorax. Tarsi with joints 1-3 furnished beneath with brushes of hair, sometimes wanting on the 1st and 2d joints of hind tarsi; 3d joint emarginated or bilobed, 4th joint nodiform, small, connate with 5th joint; claws simple, rarely (Phytœciini) appendiculate or cleft, paronychium slender and distinct in Prioninæ, wanting in the others.

A great family, containing an immense number of species, which live in the larval state exclusively on the woody parts of plants. The species are remarkable for large size, beauty of color, or elegance of form, and have been, on these accounts, great favorites with collectors. Nevertheless their classification, and even the definition of the family, present difficulties which have been called insuperable by every systematist who has yet attempted the task.

The species are easily recognized, the chief variations being only those of size, dependent probably on the quantity of food obtained by the larva, or the excellence of its digestive power. At any rate, the differences appear to be individual and not indicative of races. The genera are, on the other hand, extremely indistinct, as at present defined, for the reason that the species frequently differ not only by the usual specific characters of form, color, sculpture, etc., but by structural peculiarities of considerable moment, sometimes sexual, sometimes asexual. By regarding these peculiarities as of generic value, the number of genera (as in birds) has been vastly and unnecessarily increased, and the system of classification correspondingly diluted, so that the more essential points of resemblance between allied forms are lost sight of, and the arrangement becomes quite artificial. Frequent reference will be made in the following pages to the misplacement of genera by the best authorities; and, also, what tends to greater confusion, to errors of description in several of our genera, which lead to an incorrect appreciation of their relations.

Several characters which have been recently adopted for the differentiation of tribes seem to be of but small, or still worse, illusory importance; and among these, the extension outwards of the middle coxæ, so that they attain or not the episterna, is one of the most indefinite, and we have, therefore, rejected it as far as possible in the following scheme.

We have, in common with previous investigators, failed thus far to find any distinct difference capable of expression in words between this family and Chrysomelidæ. One familiar with the subject will rarely if ever mistake one for the other. But so far the essential difference between the Tetramera, of which the larvæ feed upon wood, and those feeding upon cellular vegetable tissues has eluded observation. We can merely at present observe that a slight approximation to it seems to be made in the fact, that in the Cerambycidæ there is a tendency in the epimera of the metathorax to extend to the sides of the ventral segments, while in the Chrysomelidæ the 1st ventral is prolonged forwards at the sides to meet the metathorax; thus showing probably a lower, though necessarily more recent, type, which could have existed only since the development of the higher broad-leaved plants.

And in continuation of this same subject, we would refer the difficulties of classification of the Longicorns to the fact, that being exclusively feeders upon woody tissue, and passing a very long period in the larval state, in the interior of trunks or branches of trees, protected against inundations by the buoyancy of their juvenile homes, they have been peculiarly qualified, not only for an early introduction, but prolonged existence; and that we, therefore, have here a more perfect record than is likely to occur in any other land animals. Among marine objects frequent examples occur of the representation in the existing fauna of forms more fully represented in previous geologic periods; but this is the first instance in which we have had occasion to note the probability of its occurrence in the Coleoptera. Dr. LeConte has already alluded to this subject,* especially in connection with the Spondylidæ, and we are very glad to find that the idea has been approved of by our friend H. W. Bates,† the distinguished explorer of the Amazon, in words so expressive that we cannot forbear quoting them.

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* An attempt to Classify, etc., Journ. Acad. Nat. Sci. 2d, ii. 99 (1851).

† Contributions to an Insect Fauna of the Amazon Valley, Coleoptera, Longicornes, Part I. Lamiaires, p. 5–6 (from Annals and Mag. Nat. Hist. 1861).

"It is one of those groups of insects in which nature, in striving after strong individuality in the species, seems to have changed or adapted those parts of structure upon which we rely for characters of genera and groups of genera. The family, too, is found throughout all parts of the world where woody vegetation exists, and has endured, probably, under the same laws of modification, throughout long geological periods. The diversity of specific forms seems endless, running into infinite varieties of grotesque, ornamented, and extraordinary shapes; and nearly every species has structural peculiarities for its specific characters; so that in no family can genera be made so easily and numerously as here. Analysis is too easy, and has already been pushed, perhaps, to too great an extent."

This family comprises three sub-families, as follows:—

Prothorax margined; labrum connate.	PRIONINÆ.
Prothorax not margined; labrum free.	
Front tibiæ not grooved.	CERAMBYCINÆ.
Front tibiæ obliquely grooved on the inner side.	LAMIINÆ.

Sub-Family I.—PRIONINÆ.

The insects of this sub-family are generally of large size, containing in fact the longest Coleoptera known; the color is brown or black, and the elytra usually coriaceous in appearance, becoming metallic and of firmer consistence in some of the genera with finely granulated eyes. The labrum is connate with the epistoma. The ligula is always entirely corneous, without distinct paraglossæ; the supports of the labial palpi are connate with the ligula. The mandibles are strong, frequently elongated in the males, and are destitute of membrane or molar tooth. The lobes of the maxillæ are small, the inner one obsolete, and the last joint of the palpi is triangular. The antennæ are furnished with poriferous spaces, varying according to the genus and tribe. The prothorax is always distinctly margined, the front coxæ are transverse, with distinct trochantin.

The mesonotum never has stridulating surfaces, such as are seen in most other Cerambycidæ; some of the species, however, have the epipleuræ covered with fine transverse lines, and a noise is produced by rubbing the hind femora against the edge of the elytra, a phenomenon of which the first record has been made by Mr. C. V. Riley.*

Our species fall naturally into the following tribes:—

Eyes strongly granulated;	
I. Prothorax pluridentate on the side;	
3d antennal joint very long.	Ergatini.
3d antennal joint moderate.	Mallodontini.
II. Prothorax parcidentate on the sides;	
Metathoracic epimera parallel;	
Antennæ filiform.	Derobrachini.
Antennæ imbricate.	Prionini.
Metathoracic epimera narrowed behind.	Tragosomini.
III. Eyes finely granulated.	Solenopterini.

Tribe I.—ERGATINI.

One species, *Ergates spiculatus* Lec. of large size (55–63 mm. long), is not uncommon on the maritime Pacific slope and in New Mexico. The tribe is easily known by the prothorax being much broader in the male than in the female, and finely punctured; in the latter sex the sculpture is very coarse, and the small teeth of the lateral margin longer and more acute. The head is small, the eyes reniform and coarsely granulated; antennæ 11-jointed, slender, two-thirds the length of the body in the ♂, about half the length of the body in the ♀, rough with elevated punctures, with the 3d joint as long as the three following united; poriferous spaces on the 3d joint small inconspicuous, on the under surface near the distal end, gradually becoming larger, until the outer joints become entirely poriferous, and irregularly reticulated with fine elevated lines forming elongate cells, which are much less distinct, and in fact hardly to be seen in the male.

The generic characters are not sufficiently distinct from the European species *E. faber* to warrant the retention of the genus *Trichocnemis* proposed in the earliest description of this insect.

Tribe II.—MALLODONTINI.

This tribe contains also species of very large size (one from Florida is before us that is 61 mm. long), with the sides of the prothorax armed with numerous small teeth. The head is comparatively large, the eyes strongly granulated, distant, transverse, feebly emarginate; the antennæ are slender, half the length of the body in the ♂, shorter in the ♀, sparsely and coarsely punctured; the 3d joint is scarcely longer than the 4th; poriferous spaces commencing on the under surface at the distal end of the 3d joint, gradually becoming larger until they cover the outer four joints, which are sculptured with fine longitudinal elevated lines.

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* Canadian Entomologist, iv. 139.

The prothorax frequently differs in the two sexes, being nearly quadrate in the ♂, densely punctured with smooth separate facets, narrowed in front in the ♀, more coarsely punctured towards the sides, uneven on the disk.

The species form two groups: 1. Mandibles nearly horizontal, prolonged in the ♂. 2. Apagiognathus *Thom.* mandibles vertical. These characters do not seem to be of generic value.

M. gnatho Lec. from Texas belongs to the 1st group, and is further distinguished by the metathoracic episterna having the inner outline concave; this form is recognized by Lacordaire as a distinct genus, Nothopleurus (l. c. viii. 125), but the difference scarcely merits such separation; in the ♂ the metasternum has two large densely villous spaces, in the ♀ the same portion is clothed with long soft pubescence.

Tribe III.—**DEROBRACHINI.**

In this tribe the form is somewhat more slender than in the preceding; the head is smaller, the eyes coarsely granulated, very large, transverse, reniform, and approximate, both above and below, somewhat larger in the males than in the females. The mandibles are horizontal, acute, and alike in both sexes. The antennæ are 11-jointed, nearly filiform in the ♀, thicker at the base in the ♂. The sensitive pores commence on the outer half of the 3d joint, and cover the whole surface of the 4th and following joints, arranged in longitudinal grooves, separated by fine elevated lines. The prothorax is alike in both sexes, armed with three acute teeth on each side, the front one of which is in *D. geminatus* double, and occasionally even divided into two large teeth, so that the thorax becomes really 4-dentate. The legs are slender, sparsely punctured with the hind femora deeply sulcate beneath in *Derobrachus brevicollis;* densely punctured, somewhat rough in *D. geminatus;* hind femora less deeply sulcate beneath, and with several short elevated ridges on the inner surface in Orthosoma. In both genera the narrow epipleural portion of the elytra is transversely striate, forming a stridulating organ upon which the ridges or edges of the hind femora grate to produce a sound.

Among our three species we recognize but two genera, Derobrachus and Orthosoma, distinguished sufficiently by the characters above given. *Braderochus* Buquet, to which *D. geminatus* Lec. has been referred, does not seem to us sufficiently distinct. Besides the sexual characters above mentioned, the 5th segment in the ♂ of Derobrachus is broadly emarginate, the 6th visible and also emarginate; and the last dorsal is truncate and emarginate; the 5th ventral is elongate and truncate in the ♀, but the 6th is not visible.

In Orthosoma the 5th ventral is rounded in the ♀, but broadly truncate in the ♂, leaving the 6th visible.

The distribution of the species is as follows:—

Derobrachus brevicollis, Southern States.

D. geminatus from Texas, through Arizona to Lower California.

Orthosoma brunneum Forst. (cylindricum *Fabr.*), is generally distributed over the Atlantic States.

Tribe IV.—**PRIONINI.**

In this tribe the mandibles are moderate in size, acute, and similar in both sexes. The eyes are coarsely granulated, usually large, transverse, convex, and approximated. The antennæ have from 12–27 joints, varying according to species, the joints are conical and imbricated, much heavier in the ♂ than the ♀, the poriferous system commences on the 3d joint, and covers nearly the whole surface of the 4th and following joints. In Prionus ♂ and ♀ the sensitive surface is reticulate, with fine elevated lines, but in Homæsthesis ♂, the surface is quite uniform. The sides of the prothorax are armed with 3 acute teeth in Prionus, but in *Homæsthesis integra* and *emarginata* the apical and basal teeth are obsolete, so that the sides become unidentate.

P. palparis Say has the form of Prionus, but the antennæ are as in Homæsthesis.

The narrow epipleural margin is striate transversely, and stridulation is produced by rubbing against this surface the sharp edge of the hind femora, which are flattened and sulcate beneath. The legs are slender, compressed, and punctate.

The sexual characters are obvious in the antennæ, heavy in the ♂, slender in the ♀. In some of the species the abdomen in the last-named sex is enlarged, and the intercoxal process is so broad as to show that the character possesses not even a generic value; the division Prioni subterranei of Lacordaire has therefore no foundation in nature, and its contents should be distributed according to the affinities of the individual genera. The 5th ventral segment in the ♂ is truncate and broadly emarginate, so that the 6th is visible; in the ♀ it is more elongate, gradually narrowed behind and truncate, and the 6th segment is not exposed.

Our genera are but two in number, Prionus, containing several species, occurs in every part of the country; Homæsthesis (*P. integer* Lec., *emarginatus* Say) found in Colorado and New Mexico. *P. innocuus* Lec., is the female of one of these species, probably *emarginata;* the hind coxæ are very widely separated, and the intercoxal process of the 1st ventral segment is very short and wide.

There is much difference in the soles of the hind tarsi, which sometimes, as in *P. brevicornis*, are as thickly clothed with hair as the other feet and marked with a narrow medial groove; sometimes, as in *P. palparis* and Homæsthesis, flattened or broadly concave and nearly naked; sometimes again, as in *P. fissicornis* and *imbricornis*, the covering of hair is thin, so that the joints appear punctured, with a narrow smooth medial groove.

We see, therefore, in this genus that structural characters assume a merely specific importance, a fact which must be constantly borne in mind in attempting a rational classification of Cerambycidæ.

Tribe V.—TRAGOSOMINI.

This tribe is represented in our fauna by *Tragosoma Harrisii*, which scarcely differs from the North European *T. depsarium;* it occurs from Newfoundland to Vancouver Island, but is not abundant. The body is elongate (30–35 mm. long); the prothorax alike in both sexes, very hairy, and armed on the side with a single acute tooth. The elytra are punctured and finely ribbed.

The poriferous system of the antennæ of both sexes, which are slender, nearly filiform, and slightly compressed, commences on the 3d joint, on the under surface, and gradually increases, covering the whole of the joints beyond the 6th, and appears like a fine dense punctuation. The head is small, the eyes large, coarsely granulated. The legs are slender, finely punctured, and hairy. The side pieces of the metathorax are triangular, broad in front, pointed behind. The abdomen is gradually narrowed behind, with the 5th ventral segment truncate; the intercoxal process is acute.

Tribe VI.—**POECILOSOMINI.**

This tribe contains all Prionidæ with finely granulated eyes, and is represented in our fauna by single species of two genera, belonging to the group Solenopteræ. In the specimens before us, which are females, the poriferous system of the antennæ consists of a few irregular scar-like depressions on the outer joints.

The head is small, much narrower than the prothorax, which is trapezoidal, smooth, and obtusely toothed near the base in Sphenostethus; very roughly punctured and acutely toothed behind the middle in Elateropsis. In both genera the prosternum is deeply emarginate behind for the reception of the mesosternum, which is also emarginate behind.

Sphenostethus Taslei (serripennis *Hald.*) occurs in the Atlantic States. *Elateropsis fuliginosus* occurs only in the southern point of Florida, whither it has extended from Cuba.

Sub-Family II.—CERAMBYCINÆ.

The only characters we can give to define this sub-family are those already set forth in Dr. LeConte's first paper on this series of Coleoptera,* viz.: Prothorax not margined, front tibiæ not obliquely sulcate, labrum separate from the front, palpi never acute at tip; to which may be added, antennæ always pubescent, never glabrous with corrugated and extensive sensitive surfaces as in Prionidæ.

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* An attempt to classify the Longicorn Coleoptera of the part of America north of Mexico. Journ. Acad. Nat. Sci. Phila. 2d, i. 311.

Utilizing the improvements suggested by Thomson,* Dr. Le Conte,† Schiödte,‡ and Lacordaire,§ we have adopted from the first edition of this work the following table of the tribes represented in our fauna. The cross relationships can of course only be indicated in the more detailed descriptions which follow, and we are far from believing that the arrangement here adopted can be extended to the immense number of genera found in other countries, with any better success than the two classifications previously devised by Dr. LeConte.

The tribes of the Cerambycinæ genuini may be arranged as follows: the series are indicated very plainly, but can hardly be definitely restricted; the tribes seem to be limited tolerably sharply, though the cross affinities are frequently perplexing when an attempt is made at a linear arrangement.

I. Base of antennæ not enveloped by the eyes; antennæ with the 2d joint rather large, front coxæ transverse, not prominent. CALLIDIOIDES.
  Ligula corneous, eyes variable. I. ASEMINI.
  Ligula membranous, eyes fine granulated. II. CALLIDIINI.

II. Base of antennæ partly enveloped by the eyes; front coxæ not conical, though sometimes prominent; stridulating plate (absent only in Molorchus) large, never divided; ligula membranous (except in the group Oemes); 2d joint of antennæ small (except in one genus of Clytini). CERAMBYCOIDES.
  Eyes coarsely granulated, front coxal cavities open behind (except in Compsa). III. CERAMBYCINI.
  Eyes variable, front coxal cavities angulated, closed behind. IV. OBRIINI.
  Eyes finely granulated;
   a. Scutellum rounded, tibial spurs small; elytra not sinuate;
  Legs long, slender, thighs pedunculated and suddenly clavate; front coxal cavities open behind;
   Antennæ with poriferous system. V. ANCYLOCERINI.
   Antennæ without poriferous system. VI. RHOPALOPHORINI.
  Legs slender, thighs not pedunculated, nor clavate, front coxal cavities open behind;
    Front coxæ rounded. VII. PARISTEMIINI.
    Front coxæ transverse, cavities angulated. VIII. ROSALIINI.

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* Famille des Cerambycides, par M. James Thomson, Paris, 1860.

† Note on Classification of Cerambycidæ, Proc. Acad. Nat. Sci. Phila., 1862.

‡ On the Classification of Cerambyces, with particular regard to the Danish fauna, by Prof. J. C. Schiödte, Naturhist Tidschrift, 3d, ii. 483 (1864); translated in Annals and Mag. of Nat. Hist., 1865.

§ Genera des Coléoptères, vol. viii. Paris, 1869.

b. Scutellum acutely triangular; elytra not sinuate;
Front coxal cavities closed behind. IX. CALLICHROMINI.
Front coxal cavities open. X. TRACHYDERINI.

c. Scutellum rounded, or broadly triangular (Cyllene); tibial spurs large; thorax never tuberculated, nor spinose; elytra not sinuate;
Tibiæ carinated. XI. STENOSPHENINI.
Tibiæ not carinated. XII. CLYTINI.

d. Scutellum broadly rounded; thorax not tuberculate nor spinose; sides of elytra deeply sinuate near the humeri.
XIII. AGALLISSINI.

III. Base of antennæ partly enveloped by the eyes, which are nearly divided, and moderately finely granulated; 2d joint of antennæ longer than usual; front coxæ globose, widely separated; stridulating plate of mesonotum divided by a smooth furrow. (Body resembling a Lamiide.) ATIMIOIDES.
XIV. ATIMIINI.

IV. Base of antennæ not enveloped by the eyes, which are entire or emarginate, and usually finely granulated; front coxæ conical (except in Disteniini); stridulating plate of mesonotum divided by a smooth space or furrow. LEPTUROIDES.

A. Mandibles scalpriform, not fringed. XV. DISTENIINI.
B. Mandibles simple, not fringed. XVI. DESMOCERINI.
C. Mandibles acute, fringed on the inner margin.
Elytra abbreviated. XVII. NECYDALINI.
Elytra not abbreviated;
Front nearly vertical. XVIII. ENCYCLOPINI.
Front oblique or horizontal. XIX. LEPTURINI.

Tribe I.—ASEMINI.

This series contains the genera in which the ligula is corneous, with the supports of the labial palpi fixed and connate, not retractile; the eyes are usually coarsely granulated, but sometimes (Asemum, Tetropium, and Opsimus) the granulation is very fine; the antennæ are sometimes short, sometimes long, densely punctured and pubescent, and do not usually have any well-defined sensitive spaces, the 2d joint is always half as long as the 3d, and the 11th is simple; the front coxæ are generally transverse and angulated externally, with distinct trochantin, and the cavities are always open behind; the middle coxal cavities open externally; the side pieces of the mesosternum do not intervene between the sterna; the mesosternum is bent down behind but not acutely emarginate for the reception of the intercoxal process; the episterna of the metathorax are narrowed and almost pointed behind, and the epimera are not longer than the episterna.

In the ♂ the 5th ventral segment is transverse, and the 6th is visible; in the ♀ the 5th is prolonged, and 6th not visible.

The scutellum is always rounded behind; the mesonotum is punctured at the sides, the stridulating plate is wanting in Tetropium; feebly developed, and divided by a broad median vitta in Criocephalus; tolerably large and channelled in Asemum and Nothorhina; large and undivided, as in most Cerambycini, in Opsimus, and Smodicum.

An undifferentiated, or synthetic tribe, having affinities in various directions; the maxillary lobes are very feebly developed, and almost atrophied in Asemum, showing an affinity with Spondylis and Prionidæ; the divided stridulating plate indicates a relation with Lepturini; Tetropium diverges towards Callidium, Criocephalus with its coarsely granulated eyes tends towards the genuine Cerambycini, while Opsimus and Smodicum seem to be entirely isolated, having no relation with other members of our fauna.

The groups may be thus separated:—

Epimera of mesothorax normal, truncate at inner end;	
Base of prothorax normal.	ASEMI.
Base of prothorax emarginate, filled by a thin plate.	OPSIMI.
Epimera of mesothorax acutely pointed internally.	SMODICI.

Group I.—**Asemi.**

The insects of this group are generally Callidioid in form, the head short, the mandibles small, stout, and acute, the palpi nearly equal, or rarely unequal (Tetropium); the eyes finely or moderately coarsely (Criocephalus) granulated, transverse, scarcely emarginate (Asemum), large, more or less emarginate (Criocephalus), divided (Tetropium).

All the genera except Cyamophthalmus, which has the last joint of the palpi subulate, are represented in our fauna, and are distributed on both sides of the continent.

Eyes moderate, transverse, finely granulated, hairy;	
Antennæ finely pubescent.	**Asemum.**
Antennæ coarsely pubescent.	**Nothorhina.**
Eyes large, coarsely granulated, not hairy.	**Criocephalus.**
Eyes divided, rather finely granulated.	**Tetropium**

To Nothorhina belongs *Asemum asperum* Lec., from Oregon and Vancouver. From Asemum must be excluded *A. australe* Lec., which is an anomalous Criocephalus, differing from all the others by the eyes being deeply emarginate.

Group II.—**Opsimi.**

Opsimus quadrilineatus Mann., from Alaska and Oregon, constitutes this group; it is a lead-colored, finely pubescent insect, having the prothorax armed with a lateral acute spine, and the disk of the elytra with several vague impressions. The antennæ are punctured and coarsely pubescent, as long as the body; the head is short and perpendicular in front; the eyes narrow, emarginate so deeply as to be completely divided, not finely granulated; the palpi are unequal, the labial short, the maxillary elongate, last joint triangular, obliquely rounded at tip; the front coxæ are large, globose, and contiguous, scarcely angulated externally, the lateral fissure being only narrowly open; the middle coxal cavities are angulated externally, but the sternal pieces come in contact so as to cut off the episterna; the episterna of the metathorax are wide in front, narrowed and pointed behind; the legs are stout, the thighs strongly clavate, the spurs small, and the 1st joint of hind tarsi longer than the two following united.

Dicentrus Blüthneri Lec., a much smaller Californian species, also belongs to this group. It differs generically by the sides of the prothorax having an additional acute spine near the base; the thighs are not clavate. The color is piceous, the elytra have each two large brown spots.

The singular character which distinguishes this from all other groups is, that the thickened hind margin of the prothorax is broadly emarginate in the arc of a circle, and the emargination filled with a thin corneous plate. The mesonotum is punctured each side, with a very broad and flat, extremely fine, stridulating surface.

Group III.—**Smodici.**

Smodicum cucujiforme (Say), a small narrow depressed pale-yellow species, found under bark in the Atlantic States, constitutes by itself a distinct group, characterized by the mesothoracic epimera being narrowed and acutely pointed inwards; the middle coxal cavities are widely open externally.

The front is broad, short, and perpendicular, the eyes coarsely granulated, very deeply emarginated; the mandibles small, pyramidal, and entire, the genæ very short; the palpi are short, equal, not dilated; the mentum is narrowed and rounded in front, and the ligula appears to be of a corneous consistence, with the supports of the labial palpi less distant than usual and connate. The antennæ are polished, very sparsely punctured and pilose, and have two obscurely defined sensitive spots near the extremity of the 5th and following joints; they are scarcely as long as the body in the ♂, shorter and more slender in the ♀.

On the under surface of the prothorax is seen on each side a large reniform impression, which is opaque, coarsely punctured and slightly hairy, and which according to Lacordaire is wanting in some exotic species; the front coxal cavities are small, quadrate, not angulated externally, widely open behind; the prosternum is rather broad. The mesosternum is broad, flat, and truncate behind; the ventral segments 1–4 diminish gradually in length, the 5th is very short, and broadly subemarginate in ♂, narrower and elongate in ♀.

The genus Smodicum seems more allied to Asemum, than to Atimia, with which it has been associated by Lacordaire.* The eyes are coarsely granulated in Smodicum, and very finely in Atimia; the front coxal cavities open in the former, and closed in the latter. The one is an undifferentiated form of typical Cerambycidæ, the other an anomalous form leading to some of the Lamiide groups.

Tribe II.—**CALLIDIINI.**

A tribe containing species usually depressed, and rarely slender in form; the prothorax and elytra are never spinose. The eyes are finely granulated, deeply emarginate, but do not embrace the base of the antennæ; the head rather small, with the front short, perpendicular, or nearly so; mandibles short, stout, acute, genæ moderately long; palpi usually very unequal, dilated. Antennæ with the outer joints sericeous, or punctured, without distinct poriferous spaces; the 2d joint not as large as in Asemini, but longer than usual. Front coxal cavities transverse, very strongly angulated, with large trochantin, open behind; prosternum vari-

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* Gen. Col. ix. 143.

able; middle coxal cavities open externally; mesosternum sometimes wide and emarginate behind, sometimes triangular and pointed, side pieces large; metasternum with side pieces wider than usual. Legs moderate in length, thighs generally strongly clubbed, 1st joint of hind tarsi at least twice as long as the 2d. Abdomen with ventral segments slightly diminishing in length, 5th, in ♂, short, subemarginate.

The antennæ, in ♂, are usually longer than the body, and thicker at base than in ♀. Flying hairs are seen on the legs and antennæ, and frequently on the body.

As in the Stenopteri, there are mute and sonant genera, and according to the sculpture of the mesonotum they may be arranged as follows:—

A. Mesonotum with a large, undivided, very finely striate stridulating surface.
  Hind coxæ not prominent, thighs slender. **Gonocallus.**
  Hind coxæ very prominent, thighs strongly clubbed; metasternum with scent pores;
    Elytra with ivory lines. **Physocnemum.**
    Elytra uniform. **Rhopalopus.**
  Hind coxæ not prominent; metasternum without scent pores;
    Prosternum broad or moderate, hind coxæ inclosed by side pieces and 1st ventral segment. **Hylotrupes.**
    Prosternum very narrow, pointed, hind coxæ not inclosed; prothorax rounded. **Phymatodes.**
B. Mesonotum polished, with large scattered punctures;
  Mesosternum broad, emarginate. **Merium.**
  Mesosternum obtusely triangular. **Callidium.**
C. Mesonotum punctured and pubescent at the sides, with a medial stridulating surface. **Xylocrius.**

Gonocallus is established on *C. collare* Kirby (lepidum *Lec.*), a very anomalous species with slender thighs, and the ♂ antennæ 12-jointed. It is an annectent branch towards Stenosphenus and Clytus.

Semanotus does not appear in the above scheme, as the former representative of the genus in our fauna, *C. ligneum* Fabr., appears to us more naturally placed as a section of Hylotrupes, differing merely by the sternal pieces being less dilated.

We have retained Merium *Kirby*, because the type *M. Proteus*, though agreeing with Callidium in the sculpture of the mesonotum, differs essentially in the form of the mesosternum; the sculpture is also different, there being indications, more or less distinct, of two ivory vittæ on each elytron.

Curious sexual differences appear on the under surfaces of the prothorax in Phymatodes and Callidium; the punctures are coarser and more numerous in ♂.

Xylocrius *Lec.* is founded upon *Callidium Agassizii* Lec. (Proc. Acad. Nat. Sci., 1861, 357), a black coarsely punctured species, from California; it is of more convex form than usual in this group, the antennæ are shorter and stouter with joints 3–5 equal, the palpi unequal, the prosternum narrow and pointed behind, the mesosternum subtriangular, obtusely truncated and slightly emarginate at tip, the hind coxæ not inclosed by the side pieces of metasternum. The scutellum is triangular with curved sides, and the mesonotum, though provided with a medial stridulating surface, is punctured and pubescent at the sides. The hind tarsi are stouter than in the other genera of this group, and the thighs are moderately clubbed.

Tribe III.—**CERAMBYCINI.**

A very extensive series, of rather difficult definition, and containing a large number of genera, which seem to have been unnecessarily multiplied, on account of the unimportance of the characters used for the definition of the separate groups. As here restricted, the tribe contains all of the groups of Section A. (Lac. Gen. Col. viii. p. 202), which are represented in our fauna, except Asemini and Obriini; in other words, all genera having the eyes strongly granulated, the front coxal cavities usually open, the abdomen normal in both sexes, and the antennæ with the 2d joint small.

The ligula is sometimes (Oeme, etc.) corneous, but usually membranous, and deeply bilobed; the scutellum is usually rounded, rarely (Chion) triangular and acute; the stridulating surface is fine, and covers nearly the whole mesonotum; the antennæ are nearly always long, and without distinct sensitive spaces. The mandibles are acute at tip. The middle coxal cavities are sometimes open, sometimes closed, varying frequently, to an appreciable extent, in the species of the same genus. The elytra, as observed by Lacordaire, are not abbreviated, but they are slightly so in *Gracilia manca;* the eyes are not divided in any of our genera, though always deeply emarginated, and embracing the antennal tubercles.

The genera in our fauna may be divided into the following groups:—

Thighs not toothed beneath;	
Ligula more or less corneous.	OEMES.
Ligula membranous;	
Middle coxal cavities angulated.	CERAMBYCI.
Middle coxal cavities rounded.	IBIDIONES.
Thighs beneath armed with a broad tooth.	CURII.

Group I.—**Oemes.**

The ligula is more or less corneous, and usually only emarginate at tip; though in Achryson, corneous, with the front part membranous, and broadly bilobed; the body is slender and elongate, the palpi frequently very unequal, the antennæ usually long, and longer than the body in ♂; the eyes are usually very large, convex, coarsely granulated, and very deeply emarginated. The thighs are rather slender, except in Gracilia, where they are strongly clavate.

Three sub-groups are indicated:—

Epimera of mesothorax large;	
Front trochantins very distinct.	OEMES.
Front trochantins not visible.	ACHRYSONES.
Epimera of mesothorax small.	GRACILIÆ.

Sub-Group 1.—OEMES.

Three species of Oeme, and one each of Malacopterus and Eucrossus from Arizona, represents this sub-group in our fauna; they are pale brown, slender insects, with the antennæ hairy beneath; rough with small acute tubercles on the under surface of the 3d, 4th, and 5th joints in Oeme; these joints in Eucrossus are not rough, but are armed on the inner side with a terminal spine; the prosternum is very narrow and prolonged in Oeme; moderate in width in Eucrossus; mesosternum narrow in Oeme and Malacopterus, wider and truncate in Eucrossus; the palpi are dilated in the latter two, but scarcely so in the former, very unequal in all.* The prothorax is strongly constricted at base in Oeme, but in Ganimus is transverse, more rounded on the sides, and not constricted at base.

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* Lacordaire, l. c. viii. 222, says that the palpi are subequal in Oeme, but his specimen seems to have been much mutilated.

The sculpture of the prothorax of the ♂ in Eucrossus is peculiar; finely alutaceous, opaque, with a smooth dorsal vitta, and a large scar-like mark each side, nearly parallel with the dorsal line, commencing near the base, suddenly inflexed just in front of the middle, and then abbreviated.

The episterna of the metathorax in Oeme and Eucrossus are triangular, wide in front, and pointed behind, as in Criocephalus.

The species *E. villicornis* is 18 mm. long, of a pale-brown color; with the elytra feebly punctured, clothed with erect pubescence, marked with two very faint lines, and armed with a small subsutural spine at tip; the joints of the antennæ from the 3d are clothed beneath with a dense fringe of hair, becoming thinner to the 8th, where it disappears.*

The essential characters of this sub-group are in the front coxæ being prominent, very strongly angulated externally, with large trochantin; the middle and hind coxæ are also prominent; the 5th ventral of the ♂ is as large as the 4th and emarginate at tip in Oeme; equally large and truncate in Malacopterus; small and truncate in Eucrossus.

The genera may be distinguished as follows:—

Palpi very unequal, dilated;
  Prosternum laminiform; antennæ rough with elevated points; mesosternum very narrow;
    Prothorax lobed at base. **Malacopterus.**
    Prothorax constricted at base. **Oeme.**
  Prosternum not laminiform; antennæ very hairy beneath, joints 3–6 with a terminal spine;
    Body uniformly pubescent. **Eucrossus.**
    Body with transverse bands of yellow pubescence. **Dryobius.**
Palpi short, equal, slender;
  Front coxæ contiguous, hardly prominent; middle coxæ distant. **Haplidus.**

The position of Dryobius is doubtful; the eyes are almost finely granulated, and the front coxal cavities much less angulated externally, but the affinities seem to be stronger than with any other group. The type and only species is *Callidium sexfasciatum* Say, a rare insect of the Mississippi Valley.

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* *Malacopterus vittatus* resembles in form Oeme, and the antennæ are almost equally rough; but the prothorax is not constricted behind, and has a broad basal lobe as described in the African genus Hypæschrus, with which it further agrees in having the middle coxæ very large and nearly contiguous, but differs by the palpi being very unequal. Ganimus *Lec.* is a synonym.

Haplidus is founded upon *H. testaceus* Lec., a slender finely pubescent brown insect, without any striking characters; it occurs in California and Utah, and the affinities of it seem to us also doubtful.

Sub-Group 2.—ACHRYSONES.

Slender, sub-cylindrical species, with slightly dilated palpi; the head short, and front perpendicular as in Oemes; the front coxæ globose, prominent (contiguous in Achryson), not angulated externally, trochantin not visible; the middle coxæ are also prominent, closed externally, the mesosternum is moderately wide, truncate at tip in *A. surinamum*, narrow and sub-triangular in the Texan *A. concolor;* the elytra are armed with a terminal spine in the former, but are rounded in the latter. The 5th ventral segment of ♂ is truncate, but not shorter than the 4th.

A. surinamum (Linn.), (*Stenocorus circumflexus* Fabr.) is found from the Middle States to Mexico and South America; it is a slender pale-brown insect, with dark angulated lines on the elytra.

Sub-Group 3.—GRACILIÆ.

Very small slender species of piceous color, very finely punctured and pubescent, constitute this sub-group. The head is short, as in the other sub-groups, the palpi very unequal, the labial short, the maxillary long with the last joint triangular, obliquely truncate so as to appear pointed; eyes large, coarsely granulated, deeply emarginate, almost divided; front coxæ very prominent, nearly contiguous, the prosternum being narrow, and pointed behind; the coxal cavities are subquadrate; the middle coxæ are prominent, separated by the triangular mesosternum, the cavities are angulated externally, but the epimera are very small, and do not fully reach the coxæ; the episterna of the metathorax are linear; the 1st ventral segment is somewhat longer than usual. The legs are short, the thighs thick and clavate, the 1st joint of the hind tarsi longer than the 2d and 3d.

The mesonotum is covered with stridulating surface; it is less transverse than usual, nearly quadrate, and finely margined at the sides.

The antennæ are hairy, in ♂ longer, in ♀ shorter than the body. *Gracilia pygmæa* has been introduced in articles of commerce from Europe. *G. manca* is very rare in the Middle States, and differs by the prothorax being more rounded on the sides, and the elytra a little shorter than the abdomen.

Group II.—**Cerambyci.**

This group contains a large number of genera, which have been partitioned by Lacordaire into several minor groups, separated by evanescent or variable characters. Although the typical genera of these smaller groups possess in every instance a distinct appearance by which they may be recognized, yet the structural variations observed even within the limits of the genera themselves, when the species are numerous, are such as to completely prevent any definition of these minor divisions. For the information of the general student, we will mention below the groups of Lacordaire to which he has referred, or would refer the genera represented in our fauna.

We have placed in this group all those genera with coarsely granulated eyes, having the ligula entirely membranous and deeply bilobed, and the middle coxæ more or less angulated externally, even when the two sternal plates come into contact. The other characters are all variable to a greater or less degree, as will be seen by the following table. The metathoracic episterna have in many species a distinct aperture near the hind coxa, at the side of the metasternum, which is the orifice of the scent gland, but even in species of the same genus (Elaphidion) they vary greatly in size, so as almost, or even completely, to disappear. In the same manner the spines of the antennæ, of the femora, and of the elytra have rather specific than generic value. In Eburia there is a gradual transition from those species in which the lateral spines of the prothorax are acute and prominent to those in which they are entirely wanting.

Antennæ 11-jointed, with recurved hooks on joints 3–6 (prothorax plicate, armed, elytra bispinose). **Hammaticherus.**

Antennæ 12-jointed, sericeous, serrate. **Axestinus.**

Antennæ 11-jointed, without recurved hooks;

A. Front coxal cavities angulated; antennæ, thighs, and elytra, not spinose;

Frontal suture deep; metathorax without scent pores;

Prothorax uneven, tuberculate at the sides. **Brothylus.**

Prothorax even (palpi equal). **Stromatium.**

Frontal suture faint, scent pores distinct;

Elongate, prothorax even, antennæ very long. **Osmidus.**

B. Front coxal cavities rounded, or feebly angulated;

a. Scutellum acute, triangular, frontal suture very deep; antennæ very long, sulcate;

Prothorax with lateral spine, but no dorsal callosities, elytra and thighs spinose at tip; episterna of metathorax wider in front, scent pores distinct. **Chion.**

b. Scutellum rounded behind;

* Femora not strongly clubbed; antennæ not carinated;

Elytra with ivory spots, prothorax with dorsal callosities, and usually with lateral spines; elytra and thighs either spinose or unarmed; scent pores distinct; antennæ unarmed. **Eburia.**

Elytra without ivory spots, antennæ usually spinose;

Episterna of metathorax narrower behind, antennæ with sensitive spaces. **Romaleum.**

Episterna of metathorax parallel; antennæ without sensitive spaces. **Elaphidion.**

** Antennæ carinated, femora not strongly clubbed;

Antennæ slender. **Aneflus.**

Antennæ stout, joints excavated beneath. **Eustroma.**

*** Femora strongly clubbed.

Antennæ bisulcate. **Tylonotus.**

Antennæ not sulcate. **Zamodes.**

Hammaticherus is represented by *H. mexicanus* Thomson, which occurs in Lower California.

Axestinus is allied to Xestia, but is clothed with fine gray pubescence; the species *A. obscurus* is of large size (30 mm.), and occurs in New Mexico.

To Stromatium may be referred *Anoplium pubescens* Hald.; it belongs to the division of the genus without pubescent spaces on the prothorax of the ♂; the disk is, however, more finely punctured in that sex than in the ♀, just as in Romaleum.

Osmidus contains an elongate species from Lower California, resembling in appearance Hesperophanes, and like many of the species of that genus, finely and densely pubescent, with round denuded slightly elevated spots on the elytra; the absence of the deep frontal suture seen in the neighboring genera is a remarkable character.

Romaleum *White* has distinct sensitive spaces on the antennæ, especially well marked in the ♀, commencing in a small depression on the outer face of the 4th joint. It contains all of our large species of Elaphidion, except *protensum*, which has carinated antennæ and tibiæ, and belongs to the genus Aneflus. The typical species of Romaleum is *Enaphalodes simplicicollis* Hald. (Elaph. pulverulentum *Hald.*, nec *De Geer*). It corresponds with Hypermallus *Lac.* in part, but the greater number of the species mentioned by him have been replaced in Elaphidion, as the differences in the sternum, upon which the genera were separated, seem to be of purely specific importance.

We have been disposed to retain Anoplium for the second species of Haldeman, *A. unicolor*, which has been fully described by Lacordaire; the first species being placed in Stromatium, the name is thus rendered disposable. But it seems to be so slightly different from Elaphidion, that it is more prudent to suppress it.

Aneflus contains *E. protensum* with the elytra bispinose, and *E. tenue, lineare*, etc., with the spines much shorter, or wanting.

Eustroma is founded upon *Elaph. validum* Lec., a large, stout species from Texas and Lower California, with short and stout antennæ, the intermediate joints of which are concave beneath; the antennal spines are short, and the femora and elytra are unarmed; the 4th joint of the antennæ is conspicuously shorter than the 3d or 5th; the sides of the prothorax have a large oval patch of dense yellowish pubescence in two specimens from Texas, but in another specimen it is much less distinct, and in one, from Lower California, it is not visible.

Zamodes contains a black species from Pennsylvania, of the same size and form as Tylonotus but without callosities on the prothorax; the antennæ, legs, and general surface of the body are clothed with long, erect, flying hairs. From its strong resemblance in appearance to Zamium *Pascoe*, which is placed by Lacordaire in his group Saphanides, the generic name has been derived.

Group III.—**Ibidiones.**

The very elongate form, large and coarsely granulated eyes, and clavate thighs will easily distinguish the members of this group from all others in our fauna; in addition, it will be observed, that the front coxæ are small, rounded, and either inclosed, or a little open behind, the middle coxæ are not open externally and the cavities not at all angulated; the hind tarsi are slender, the 1st joint as long as the two following united. The front is small and perpendicular, the mandibles short, acute, the palpi somewhat unequal, short, dilated.

The antennæ are elongate, slender in the ♀, thickened at the base in ♂; sparsely punctured, and pubescent, not sericeous. The episterna of the metathorax are narrow, parallel, and have very distinct scent pores near the hind end. Tibiæ not carinate in our species.

This group evidently belongs to the same series as the preceding, with which it connects closely, though assuming a form which is characteristic. The prothorax is very elongate and cylindrical, as in certain Elaphidion, but the antennæ are never spinose.

The two genera belonging to our fauna may be thus distinguished:—

Front coxal cavities closed behind.	**Compsa.**
Front coxal cavities open behind.	**Heterachthes.**

Of Compsa, two species are found in Lower California; the genus is easily distinguished by the character given above, and by the joints 3–6 of the antennæ being distinctly carinated; one of the species *C. puncticollis* Lec., is remarkable for the dull color, and coarsely punctured prothorax.

Group IV.—**Curii.**

The singular characters of the two species of Curius *Newm.*, compel us to separate them as a distinct group, which is easily recognized by the coarsely granulate eyes, and very strongly clavate thighs, armed beneath with a broad tooth. The form is elongate, in the typical species depressed, dull, and slightly pubescent; in *C. scambus* cylindrical, polished, and glabrous, resembling Ibidion. The front is small, declivous, the antennal tubercles not prominent, the palpi somewhat unequal, the mandibles small and acute; the antennæ are slender, longer than the body, annulated, finely punctulate and pubescent. The front coxæ are globose, prominent, nearly contiguous in *C. dentatus*, separated in *C. scambus*, and the cavities are open behind; the middle coxæ are entirely inclosed by the sterna, and the side pieces of the mesothorax are *undivided;*[*] the first joint of the abdomen is as long as the two following in *C. dentatus*, but equal to the three following in *C. scambus*.

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[*] This character is otherwise only known to us in the tribe Ancylocerini, also a very anomalous form.

The differences above noted indicate the necessity of separating *C. scambus* as a distinct genus for which the name Plectromerus *Dej.* may be adopted.

Tribe IV.—**OBRIINI.**

A tribe containing only small species, which are easily distinguished by the front coxæ being more prominent than usual, sometimes nearly conical, and frequently contiguous, but completely inclosed behind. The palpi are usually slender, rarely with the last joint triangular. The other characters are abnormal, the abdomen in the ♀ being deformed in the group Obria, and the elytra more or less subulate or abbreviated in Stenopteri; the eyes are finely granulated in the latter, variable in the former.

The affinities of this tribe lead from the last groups of Cerambycini, towards the tribes with finely granulated eyes, Lepturini on the one side, and Callidiini on the other.

Group I.—**Obria.**

This group contains a few small species in which the granulation of the eyes has ceased to be of primary importance; but which is easily distinguished by the 1st segment of the abdomen being very long, and the 2d and following irregular, hairy, excavated or deformed in the ♀.

The mandibles are small and acute, the antennæ slender, as long as, or shorter than, the body; the palpi are unequal, and the last joint is rarely dilated. The antennæ are slender, and the 2d joint is larger than in genuine Cerambycini. The prothorax is variable in form, always, however, constricted and pedunculated at base, and narrower than the elytra; the front coxæ are conical, prominent, contiguous, cavities small, rounded or angulated, closed behind; middle coxal cavities not open externally. The thighs are strongly clavate, the tibial spurs small or moderate, and the 1st joint of the hind tarsi is as long as the two following.

It is worthy of remark that in Obrium the structure of the eyes has merely specific significance; in our *O. rubrum* the eyes are very coarsely granulated, while in the nearly allied European *O. brunneum* the lenses are much smaller.

Our genera may be grouped as follows:—

- Palpi with last joint broadly triangular. **Pœcilobrium.**
- Palpi slightly dilated; tarsi tumid. **Eumichthus.**
- Palpi not dilated, last joint cylindrical;
  - Eyes coarsely granulated;
    - Prothorax much narrowed behind. **Phyton.**
    - Prothorax equally narrowed before and behind, tuberculate at the sides. **Obrium.**
  - Eyes very finely granulated; prothorax with dorsal and lateral tubercles;
    - Punctures fine, flying hairs sparse. **Hybodera.**
    - Punctures coarse, flying hairs long, numerous.
      - Mesosternum wide. **Callimus.**
      - Mesosternum narrow. **Megobrium.**

Pœcilobrium *Horn*, is founded on *Callimus chalybeus* Lec., a small highly polished blue species from California, with the elytra sparsely punctured, and the front thighs sometimes yellow.

Phyton contains *Callidium pallidum* Say, from the Atlantic States. Obrium has two species in the Atlantic States.

Eumichthus œdipus Lec., is a small species from Vancouver, dark brown, finely punctured and pubescent, with two narrow cinereous elytral bands, between which the color is darker. The first two joints of the tarsi are swollen.

Hybodera tuberculata, from California and Vancouver, of brown color, with a large basal patch, and posterior transverse band of pale sericeous pubescence. Besides the sculpture, it differs from Cartallum by the prothorax having four discoidal tubercles, and a smaller medial one.

Callimus contains two species from California. They resemble very much the European *Cartallum ebulinum*, but apart from the specific differences in color they have the last joint of the palpi quite cylindrical, and the mesosternum very wide. They constituted *Pilema* Lec., which, according to Bates, does not differ from the European Callimus.

Megobrium Edwardsii Lec. is a Californian species, 12 mm. long, of a testaceous color, with the punctures of the elytra sparse, arranged in rows near the base, obsolete behind the middle.

Lacordaire mentions that the front coxal cavities of Callimus are not angulated externally; on examination they seem quite as much so as in the other genera of this group, though the coxal fissure is not as widely open as in the next tribe.

Group II.—**Stenopteri.**

A group characterized by the front coxal cavities being widely angulated externally, but entirely closed behind, and the abdomen normal in both sexes. The head is porrect, the front large and oblique, with the labrum prominent, the epistoma not separated; the eyes are finely granulated and deeply emarginated; the mandibles are very acute, the mentum rather larger than usual, the palpi short, equal, not dilated. Antennæ punctulate and sericeous, longer than the body in some ♂, shorter in ♀. Front coxæ as above; mesosternum flat, broadly emarginate behind in Callimoxys, triangular, and truncate in Molorchus; coxæ globose, more prominent than usual, nearly inclosed externally. Abdomen with segments gradually diminishing in length, 5th segment shorter in ♂. Legs rather long, thighs strongly clubbed, hind tarsi with 1st joint twice as long as the 2d; the legs and pronotum are clothed with long flying hairs. The elytra are elongated, and subulate in Callimoxys; short, dehiscent, and separately rounded at tip in Molorchus. The stridulating surface is large and undivided in Callimoxys; very imperfect, oblong, margined each side, slightly elevated in the middle, and nearly destitute of transverse lines in Molorchus. The outer lobe of the maxillæ in Callimoxys is elongated nearly as in Rhopalophorus.

Heliomanes and Glaphyra *Newm.*, are not different from Molorchus; to Callimoxys belong the species heretofore referred to the European genus Stenopterus; the two genera occur on both sides of the continent, the latter is remarkable for having the hind tibiæ curved inwards, and furnished on the outer side with two rows of acute tubercles, giving a serrate appearance.

Our species of Callimoxys differ from (the description of) the European by having the mesosternum broad, and the thighs suddenly and strongly clavate, but these characters are probably not of generic value, and the figure of *C. gracilis* (DuVal, Gen. Col. Eur., iv. pl. 45, fig. 210) would do equally well for one of our species. The prothorax varies from red to black, the latter color prevailing in the ♂.

Tribe V.—**RHOPALOPHORINI.**

A single genus Rhopalophorus (*Tinopus* Lec.) represents this tribe in the Middle, Western, and Southern States; they are small, slender insects, of blackish-gray plumbeous color, with red prothorax; the head is elongate, the front rather large, oblique, concave, with the epistoma and labrum more prominent than usual; the eyes are finely granulated, and deeply emarginate; genæ long, mandibles very acute; mentum transverse, of usual form, palpi short, equal, not dilated, outer lobe of maxillæ as long as the palpi. Antennæ slender, with the 4th joint shorter than the 3d and 5th, as long as the body in ♂, shorter in ♀, punctulate and sericeous, without poriferous system. Front coxal cavities small, not angulated, widely open behind; mesosternum somewhat obtusely pointed in front, and feebly concave each side, to complete the front coxal cavities, general surface flat, broad between the coxæ, and emarginate behind, coxal cavities small, closed. Abdomen with the 1st ventral segment longer. Legs very long and slender, thighs suddenly and strongly clubbed at the tip, hind tarsi with the 1st joint twice as long as the 2d. The elytra are flat, especially at the base, and suddenly declivous so that the basal edge is unusually distinct; the scutellum is small, but obtuse, the stridulating surface is large and undivided.

This group has been considered as allied to Callichroma, but seems better placed as an ally of Stenopterus, etc., leading to Necydalis, and thence to Leptura.

Tribe VI.—ANCYLOCERINI.

Body slender, cylindrical, coarsely punctured; head short, front small, perpendicular, genæ large; eyes finely granulated, deeply emarginated, vertex concave; mandibles acute, palpi short, nearly equal, not dilated; mentum very transverse, excavated, as in most Cerambycidæ. Antennæ serrate, half as long as the body in ♀, longer than the body in ♂, very sparsely punctured, sensitive system commencing on the 3d joint, forming two well-defined spaces on the under surface, separated by the sharp edge of the joint, 11th joint oval, pointed at tip in ♀, very short and curved in ♂.

Front coxal cavities small, open behind; middle coxal cavities nearly closed by the sterna; mesosternum deeply emarginate behind. Legs slender, thighs suddenly and strongly clubbed, hind pair armed with a terminal spine on the inner side; 1st joint of hind tarsi scarcely one-half longer than the 2d. Ventral segments nearly equal in length except the 1st, which is longer.

A very peculiar tribe, recalling Ibidion by its slender, cylindrical form, but not related to it nor to any other known to us.

But one species *Ancylocera rugicollis*, black with scarlet elytra and abdomen, is found in our Southern States from North Carolina to Texas.

Tribe VII.—PARISTEMIINI.

We have adopted the name of this tribe from Lacordaire; it has two representatives in our fauna; four species of Pteroplatus from Florida, Texas, New Mexico, and Arizona, and Holopleura, found in California.

The head is moderate, mandibles small, acute, curved; the eyes large, very deeply emarginate, not very finely granulated, and embracing the base of the antennæ rather less than usual, the upper lobe is larger than usual; the front is rather flat, with the transverse suture very deep; the palpi short, with the last joint cylindrical, truncate at tip; the mentum is trapezoidal, and more porrect than in neighboring groups, being almost as in Callidium; the antennæ (♀) are a little more than half as long as the body, stout, serrate, and velvety; the 1st joint is as long as the 3d, but stouter, the 2d is one-third the size of the 3d, the 4th shorter than the 5th, which is the longest, the following diminish in length. The prothorax is rounded on the sides, truncate in front, bisinuate at base; scutellum variable in form; elytra a little wider from the base, rounded at tip, with the suture, margin, and three discoidal costæ elevated, the intermediate costa being the longest; epipleuræ well marked, extending to the tip. Prosternum narrow between the coxæ, which are rounded, with the cavities open behind, and feebly angulated externally; mesosternum flat, triangular, coxal cavities widely open externally; epimera of metathorax moderately wide, parallel. Ventral segments nearly equal. Legs short, slender, thighs not clavate, tibial spurs very small, 1st joint of hind tarsi as long as the two following. The stridulating plate is very finely striate, large and undivided, with a row of punctures each side. On each side of the pronotum there is an elliptical depressed space, tolerably well defined by an acute edge.

This like the following tribe is a transition form; the 2d joint of the antennæ is too large for the series in which we have placed it, but, on the other hand, the front coxæ are not transverse as in the Callidioides. It seems to lead off from the latter towards the Stenaspes; it is easily recognized by the peculiar sculpture, and the costate elytra, with epipleuræ prolonged to the tip, a character not observed in any other tribe.

Antennæ short, serrate, 11th joint appendiculate.	**Pteroplatus.**
Antennæ longer, slender, 11th joint simple.	**Holopleura.**

Group I.—**Rosaliini.**

A very distinct tribe, represented by *Rosalia funebris*, in Oregon and Vancouver, a large, elongate, velvety black insect, with bands and antennal rings of cinereous. The head is moderate, front not elongated, obliquely declivous, antennal tubercles not elevated, genæ long; eyes finely granulated, very deeply emarginated, upper lobe rather broad; antennæ long, outer joints sericeous, densely pubescent, joints 3–7 with a tuft of longer hair at the apex, last joint feebly divided in ♂. Mandibles stout, acute, with a small tooth near the base; mentum narrowed in front, entirely corneous; palpi nearly equal, truncate at tip. Prothorax constricted at base and apex, with an acute lateral spine each side, and two acute dorsal tubercles; prosternum rather broad, coxal cavities strongly angulated, widely open behind; mesosternum broad, truncate behind, declivous in front; epimera very large, extending to the coxal cavities; metasternum not acutely emarginate behind, episterna rather wide, narrowed behind, and nearly pointed; intercoxal process of 1st ventral broadly rounded in front, segments nearly equal in length, 5th truncate at tip, with an acute, short, medial cleft in ♀; shorter, triangularly impressed, and hairy in ♂; the last dorsal in ♂ is deeply emarginate, and in ♀ rounded and subtruncate; the 6th ventral and corresponding interior dorsal segment is prominent and truncate in ♀. Legs slender, moderately long, thighs not clavate, tibial spurs small, 1st joint of hind tarsi as long as the two following united.

The affinities of this tribe are somewhat doubtful; the scutellum is rounded behind; the mesonotum is smooth, with a broad medial vitta of stridulating surface, and a small lateral space is punctured and pubescent. The form of the front coxæ is very much as in Callidium, near which it is placed by Schiödte, but the long and tufted antennæ, with the 2d joint very small, and the tuberculate prothorax and slender legs prevent such an association. The eyes embrace the base of the antennæ rather less than in the neighboring tribes.

Tribe VIII.—CALLICHROMINI.

With this tribe commences a series distinguished by the scutellum being acute at tip, and the antennæ carinate on the lower edge, with the poriferous system arranged in a groove each side of the carina. The eyes are always very finely granulated, and deeply emarginated, embracing the base of the antennæ, with the upper lobe tolerably wide.

This tribe is further distinguished by the mandibles being long, pyramidal, nearly straight, bent only at the tip, which is acute. The outer lobe of the maxillæ is longer than the palpi, which are cylindrical; the labial palpi are much longer, feebly dilated, truncate at tip; the mentum is flat, trapezoidal, and porrect, gradually becoming coriaceous in front; the base of the maxillæ is very large and flat; the gular process for support of the mentum is nearly wanting; the genæ are long. The prothorax is constricted before and behind, armed with a strong lateral spine. Scutellum moderately large, triangular, acute; mesonotum smooth, with a narrow triangular stridulating surface; elytra narrowed from the humeri, which are prominent, rounded at tip. Prosternum not tuberculate, rounded behind, coxæ globose, cavities not angulated externally, completely closed behind; mesosternum parallel, emarginate behind, coxal cavities rounded, scarcely angulated, closed by the epimera, which extend inwards further than usual; metathoracic episterna wider in front, with very distinct posterior scent pores; hind coxæ rather prominent. Ventral segments, the 1st longer, the others equal, tapering considerably; the 5th in ♀ longer than wide, subtruncate; in ♂ deeply and broadly emarginate, with the 6th joint filling the space, and rounded behind. Legs slender, hind pair elongated, tibiæ compressed, feebly carinated, spurs usually not large, 1st joint of hind tarsi nearly as long as the others united.

The last joint of the antennæ is simple in both sexes, but is much longer in the ♂.

Four species of Callichroma are found in the warmer parts of the country; they exhale an agreeable musky odor, and, with one exception, are of a beautiful blue or green color.

Tribe IX.—**TRACHYDERINI.**

A very large tribe as here defined, and containing as great a variety of forms as the Cerambycini, from which it is distinguished by the acutely triangular scutellum, and finely granulated eyes. The last joint of the palpi never has the triangular form which it affects in most Cerambycini, but is usually oval, squarely truncate at tip, with a deep elliptical impression on the side.* The tibiæ are not carinate, and the tibial spurs are rather long.

The following groups may be recognized in our fauna:—

Mandibles acute, or simple at tip;
  Pronotum broadly lobed at base; poriferous system of antennæ very distinct;
    Metasternal pores absent, side pieces very wide. MEGADERI.
    Metasternal pores distinct. TRACHYDERES.
  Pronotum not lobed, sometimes subsinuate at base, poriferous system often obsolete, and palpi in some genera scarcely impressed. STENASPES.
Mandibles emarginate at tip. TYLOSES.

Group I.—**Megaderi.**

This group contains but one genus Megaderus, of which one species, *M. bifasciatus* Dupont (corallifer *Newm.*), extends from Mexico into Texas. It is a broad, flat insect, with roughly punctured prothorax, angulated on the sides behind the middle; elytra finely punctured, with a basal and medial transverse band, which are more or less confluent, separate, or even obliterated.

The antennæ are shorter than the body, with the 1st joint as long as the 3d, and a little thicker; 3d and following with poriferous spaces; outer joints velvety, 11th appendiculate, acute at tip; front rather flat, oblique; genæ long; mandibles stout, acute, palpi short, last joint not elongated, oval truncate, deeply impressed. Prothorax broad, strongly and broadly lobed at the base, deeply excavated behind the middle, especially at the sides,

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* Among the Cerambycini with coarsely granulated eyes this form of palpi may be observed, and the lateral fovea in Chion, which is an annectent form; and the same in a much less degree in some other genera. The maxillary palpi are never short as in Callichromini, nor has the ♂ an additional ventral segment. The front coxal cavities are open behind, and not angulated externally.

which are angulated; scutellum very large, acutely triangular, mesonotum sparsely punctured, with narrow medial stridulating surface; elytra finely densely punctured, rounded behind, sutural angle not rounded, nor prominent. Pro- and mesosternum very broad, the former overlapping the latter, both broadly emarginate behind; side pieces of metathorax very wide, epimera extending beyond the hind coxæ, which are widely separated; no scent pores. First ventral segment much longer; 5th longer than the 4th, broadly subtruncate at tip. Legs slender, tibial spurs long, tarsi broad, 1st joint of hind pair scarcely longer than the 2d.

An anomalous group, having an evident affinity towards Cyllene of the tribe Clytini.

Group II.—**Trachyderes.**

Insects of large size, and glabrous surface, having the antennæ compressed, much longer than the body in ♂, with very distinct poriferous system, 11th joint either simple or appendiculate; the mandibles of Dendrobias ♂ are very long, and have an acute tooth near the tip, so as to appear emarginate, without really being so. The palpi have the last joint cylindrical, and deeply foveate. The scutellum is very large, acutely triangular; mesonotum with narrow stridulating plate. Elytra convex, narrowed from the base, rounded at tip. Prothorax variable in form, tuberculate on the disk, and strongly armed on the sides in Dendrobias, uniformly convex in Lissonotus; prosternum perpendicularly declivous in both, armed also with a large tubercle in front of the coxæ in Dendrobias; mesosternum elevated, perpendicular in front; side pieces of metasternum tolerably wide, narrower behind, with scent pores in Dendrobias, without them in Lissonotus; ventral segments, 1st longer, others nearly equal. Legs rather stout, thighs moderately clubbed, tibial spurs moderate, tarsi broad, 1st joint of hind pair scarcely longer than 2d.

The two genera are found only in the most southern part of Texas, Arizona, and Lower California, and constitute two subgroups corresponding to Trachyderides, and Lissonotides of Lacordaire.

Group III.—**Stenaspes.**

We have removed from the Stenaspides of Lacordaire those genera in which the mandibles are chisel-shaped, and emarginate at the tip; and although he mentions* that in some instances this character is merely specific or sexual, we cannot avoid believing that this is the only case in genera, like Sphænothecus, composed of heterogeneous material. However this may prove on more extended observation, the group as here defined contains all those genera in our fauna in which the eyes are finely granulated, deeply emarginate, with the upper lobe wide; the scutellum acute, but not very large, though sometimes elongate; and the prothorax not distinctly lobed, but only feebly bisinuate or truncate at base. The antennæ are more slender than in Trachyderes, and the poriferous system is much less distinct, or even obsolete, though in Stenaspis it is still quite obvious, and the joints are carinate and bisulcate. In Batyle the last joint of the palpi (which is subcylindrical and truncate) is very feebly impressed.

The antennal tubercles are either much elevated, leaving a concavity between them, or scarcely elevated, in which case the vertex is nearly flat; the front in the former is very large, square, and perpendicular, and the genæ are long; in the latter the tubercles are less elevated, the front is moderate, declivous, and the genæ usually short.

They may be thus tabulated:—

A. Front large, square, perpendicular, abruptly separated from the anteocular spaces;
  Prosternum vertical behind. **Stenaspis.**
  Prosternum arcuate at tip;
    Elytra distinctly margined at the sides. **Crioprosopus.**
    Elytra not or obtusely margined;
      Prothorax armed with a lateral spine; mesosternum not protuberant;
        Body pubescent. **Tragidion.**
        Body glabrous. **Purpuricenus.**
      Prothorax rounded, convex. **Aethecerus.**
B. Front moderate, short, declivous, not abruptly defined each side;
  Two ivory vittæ on each elytron (prothorax margined at apex);
    Mesosternum declivous. **Mannophorus.**
  One ivory vitta on each elytron (prothorax not margined at apex);
    Mesosternum protuberant. **Entomosterna.**
  Elytra without ivory vittæ; mesosternum declivous;
    Body pubescent, prothorax not margined at apex. **Amannus.**
    Body pilose, prothorax margined at apex. **Batyle.**

Of the three species of Tragidion, two have the elytra sulcate, while *T. armatum* has them even: there is also a difference in the hind tarsi, which are comparatively wider in *T. annulatum*. Variations in the proportions of the joints of the hind tarsi are not unusual in Cerambycidæ, as, for instance, in Criocephalus. This fact has induced us to refer *Sphænothecus cyanicollis* to Entomosterna, instead of forming of it the new genus indicated but not named by Lacordaire.*

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* Gen. Col. ix. 167, note 1.

Of the genera tabulated above Stenaspis and Tragidion occur from the Atlantic to the Pacific in the warmer regions, the former extending northward in the central region, the latter in the Atlantic district. Purpuricenus occurs in the middle and Western States. The next three genera are found in Texas, and Batyle occurs in the Atlantic region especially southward.

The genus last named is placed by Lacordaire in Heteropsides, of which he observes that the middle coxal cavities are closed externally; we find, however, in our specimens that the mesothoracic epimera attain the coxal cavities, and that they are as open as in Purpuricenus. The character as used by Lacordaire seems very deceptive, and without value for systematic results.

Group IV.—**Tyloses.**

Closely related to the preceding, and only differing in fact by the mandibles not being acute at tip, but truncate, forming a chisel-shaped edge, which is emarginate. The front is moderate in size, nearly perpendicular, and the antennal tubercles are not much elevated; the genæ are not elongated. The scutellum is small, acutely triangular, and the stridulating plate of the mesonotum is large. The side pieces of the metasternum are tolerably wide, not narrowed behind, and the scent pores are distinct, except in *Perarthrus vittatus* and *Sphænothecus bivittatus*. The legs are slender, thighs not clavate, tibial spurs rather long, hind tarsi with the 1st joint equal to the two following; less slender in Tylosis and Crossidius than in the other genera. The antennæ are slender, with elongate sensitive spaces near the carina of the under margin. The last joint of the palpi is subcylindrical, and impressed, as usual, in the other groups of this tribe.

Our genera, which are found mostly in Texas, Arizona, and Lower California (Crossidius alone extending into Colorado, California, and Oregon), may be tabulated thus:—

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* Gen. Col. ix. 184, note 3.

A. Elytra without ivory vittæ;	
Prothorax with an acute lateral spine;	
Eyes not divided (pubescence fine).	**Oxoplus.**
Eyes divided (pubescence coarse).	**Schizax.**
Prothorax rounded on the sides, with dorsal callosities.	**Tylosis.**
Prothorax rounded on the sides, or feeble spinose, without dorsal callosities (pubescence long and partly erect).	**Crossidius.**
Prothorax narrowed in front, mesosternum convex.	**Sphænothecus.**
B. Each elytron with two ivory vittæ; prothorax narrowed in front;	
Mesosternum declivous, body robust.	**Perarthrus.**
Mesosternum protuberant, body slender.	**Ischnocnemis.**

Schizax is established on a remarkable insect, *S. senex* Lec., from Arizona; the color is black, the pubescence is coarse, dirty white, with the scutellum, suture, and side margin of elytra densely clothed with yellow pubescence; the elytra rounded at tip, with the suture slightly prominent; the antennæ are slender, and very long in the ♂.

To Crossidius belongs *Callidium discoideum* Say, which is identical with Cr. pulchrior *Bland.* The reference of Say's species to Eriphus (now Batyle) was incorrect, and was owing to the insect not having been properly identified.

To Sphænothecus should be referred *S. suturalis* Lec., from New Mexico, while the Mexican and Texan *S. bivittatus* Dupont, having distinct ivory vittæ, seems to belong more properly to Ischnocnemis *Thomson.*

Tribe X.—STENOSPHENINI.

Closely allied to the Cyllene group of Clytini, but the punctures are sparse and coarse, the pubescence scanty, and the general form more slender. The head is small, narrow and porrected in two of the species, with the front elongated, and very slightly declivous; but shorter and nearly vertical in *Stenosphenus notatus.* The eyes are finely granulated, deeply emarginated; the antennal tubercles are not elevated; antennæ as long as the body in ♀, somewhat longer in ♂, setaceous, punctured and pubescent, not sericeous, sparsely clothed beneath with flying hairs; 2d joint small, 3d longer than 4th, 3–7 armed with an apical spine on the inner side, as in Elaphidion. Palpi short, subequal, last joint nearly cylindrical, truncate at tip, not impressed. Prothorax rounded on the sides, without spines or callosities. Scutellum rounded behind, mesonotum covered with fine stridulating surface, with a few punctures each side near the edge. Elytra truncate at tip, and armed with two apical spines as in most species of Elaphidion.

Front coxal cavities rounded, open, prosternum suddenly declivous, and perpendicular behind; middle coxæ inclosed by the sternal pieces, not angulated externally; mesosternum rather broad, protuberant, suddenly declivous in front, truncate or broadly emarginate behind, side pieces moderately large, intervening between the sterna, but not extending to the coxæ. Metasternum acutely emarginate behind for the reception of the intercoxal process, episterna linear, ventral segments gradually decreasing in length.

Legs rather short, thighs not clavate, not spinose at tip; tibiæ strongly carinated, with the 1st joint as long as the two following united.

The closest affinities of this genus in the series with finely granulated eyes are evidently with Cyllene, but there is an equally evident cross affinity in the direction of Elaphidion, Sphærion, etc.

Batyle, associated with Stenosphenus by Lacordaire, has the scutellum acutely pointed, the hind legs elongated, the antennal tubercles more elevated, and the eyes more prominent. It seems to us a degraded ally of Purpuricenus, and it has been placed accordingly.

Tribe XI.—**CLYTINI.**

A tribe containing many species, but on account of the variation in appearance and characters very difficult to define. The head is sometimes rather small, sometimes large, the front long, quadrate, and vertical in some, short and oblique in others, eyes finely granulated, deeply emarginate, with the lower lobe always large; antennæ with the outer joints sericeous, usually shorter than the body in both sexes, sometimes longer in the ♂, joints 3–7 in some genera (Cyrtophorus) armed with an apical spine; palpi short, equal, dilated, but not very broadly, last joint impressed; mandibles short, stout, acute; mentum nearly semicircular, corneous. Front coxal cavities rounded, open behind, not angulated externally; middle cavities usually open, sometimes (Euderces, etc.) closed externally, side pieces large, articulating with the metasternum, so as to interpose between the meso- and metasternum; the latter with the side pieces usually wide, sometimes narrow. Legs long, thighs sometimes slender, sometimes clubbed, spines of hind tibiæ usually well developed, tibiæ not carinated, hind tarsi with first joint usually very elongate. Ventral segments diminishing gradually in length.

The scutellum is obtusely triangular in some species of Cyllene, rounded in the other genera; the mesonotum is punctured, and hairy at the sides, and has a large undivided, very finely striate stridulating surface.

The genera are numerous, and indicate three groups; the affinities are in various directions, to Megaderus, Callidium, and by a gradual transition in Euderces, etc., towards certain Lamiides. Nearly all the species of this group are varied with bands of yellow, white, and black pubescence, and the sculpture is always of fine punctures; in some species small elevations on the prothorax are intermixed with the punctures.

Groups may be defined as follows:—

Epimera of metathorax produced over the angles of the 1st ventral segment, so as to inclose the hind coxæ externally; episterna of metathorax usually wide;

Front short, intercoxal process rounded.	CYLLENES.
Front large, intercoxal process acute.	CLYTI.
Epimera of metathorax not produced, episterna linear; front large; intercoxal process of abdomen acute.	ANAGLYPTI.

Group I.—**Cyllenes.**

The head is comparatively small, the front short and oblique, the antennæ in Cyllene better developed than in the other genera, and longer than the body in ♂, nearly as long in ♀; in some of the species of that genus they are thicker at the base, as in many Callidia. The body is rather stouter and less convex than in the other groups; the prosternum is sometimes very broad, and the mesosternum gibbous, or perpendicularly declivous in front; the episterna of the metathorax are wide, and the epimera prolonged over the side angles of the 1st ventral segment, the intercoxal process of which is rounded in front. The legs are moderate, and not very unequal in length, scarcely clubbed, not spinose at tip. The affinities are partly with Megaderus, and partly with Callidium; the scutellum is usually rounded behind, but is quite distinctly triangular in some species of Cyllene.

The genera may be tabulated as follows:—

Pronotum transversely excavated at the sides near the base, prosternum perpendicular at tip, mesosternum usually convex in front. **Cyllene.**

Mesosternum oblique or nearly flat, prosternum declivous at tip, not perpendicular, pronotum not excavated at the sides, but only rounded, and constricted at base;

  Antennæ compressed, subserrate. **Plagionotus.**

  Antennæ filiform;

    Mesosternum declivous. **Calloides.**

    Mesosternum nearly flat, episterna narrower. **Arhopalus.**

Plagionotus (*Glycobius* Lec.) contains *C. speciosus* Say, a large black and yellow species which infests the sugar maple.

Calloides *Lec.* contains *C. nobilis* Harris, a large species of the Atlantic States, and the nearly allied *C. Lorquini* Buquet, of California. Arhopalus *Serv.* (*Sarosesthes* Thomson) contains only *C. fulminans* Fabr.

Group II.—**Clyti.**

The head is larger than in the Cyllenes, and the front much longer, sometimes perpendicular, and quadrate; the antennæ are always short, not very different in the sexes, filiform, or slightly thickened externally; the episterna of the metathorax are usually wide, and the epimera are produced over the angles of the 1st ventral segment, the intercoxal process of which is acute. The thighs are usually clavate, the hind pair frequently very long, and occasionally spinose at tip; the first joint of the hind tarsi usually very long.

Front rounded, declivous, thighs not spinose at tip, episterna of metathorax wide;

  Head not carinated. **Clytus.**

  Head carinated. **Xylotrechus.**

Front quadrate, perpendicular; head not carinated;

  Episterna of metathorax wide. **Plagithmysus.**

  Episterna of metathorax narrow. **Clytanthus.**

Clytus is represented by *C. marginicollis* Lap. in the Atlantic States, and *C. lanifer* Lec. in Arizona.

Clytanthus by *C. ruricola* Oliv. and *albofasciatus* Lap. in the Atlantic States.

The other two genera are distributed over our whole territory, and contain many species. Plagithmysus *Motsch.* is the same as *Neoclytus* Thomson.

Group III.—**Anaglypti.**

The head is also large, and the front long, and quadrate; the antennæ slender, moderately long, with the joints 3–5 sometimes spinose at tip; the prothorax is not narrowed in front, but always much constricted behind; the elytra are frequently gibbous at the base, and declivous at tip, and sometimes have transverse ivory bands. The episterna of the metathorax are narrow, and the epimera are scarcely produced over the angles of the 1st ventral; the intercoxal process is acute. The legs are moderate in length, and the thighs somewhat strongly clubbed, but not spinose at tip; the 1st joint of the hind tarsi is less elongated than in the other groups. The mesonotum is not punctured at the sides, and is covered with very fine stridulating lines.

In some of the genera the middle coxal cavities are nearly or entirely closed externally, but, as in other portions of the series, the transition is accomplished by such slight gradations that the character seems to have little value.

Second joint of antennæ equal to 4th;	
Antennæ not spinose, elytra without ivory spots.	**Microclytus**
Second joint of antennæ short, 3d longer than 4th;	
Elytra without ivory spots;	
Eyes oblique, emarginate.	**Cyrtophorus.**
Eyes entire, rounded.	**Tillomorpha.**
Elytra with a transverse ivory band.	**Euderces.**

Microclytus is founded upon *C. gazellula* Hald. a species of the Middle States, having entirely the form and coloration of the European *Anaglyptus mysticus*, but smaller, and differing essentially by the 2d joint of the antennæ being fully half as long as the 3d, and scarcely shorter than the 4th joint; the flying hairs are peculiarly long and numerous; the eyes are oblique, emarginate above, and pointed behind, as if the usual deeply emarginated form had been shortened by the obliteration of the upper part. The same form is seen in *Cyrtophorus verrucosus*, but less acute at the upper angle. In *Tillomorpha geminata* (Hald.) the eyes are oval, not at all emarginate, the upper part being absent; and in Euderces they are entirely divided, the lower part being emarginate, acutely pointed above, and the upper part small, distant, and oval.*

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* Lacordaire, Gen. Col. ix. 89, observes that this character, mentioned by Dr. LeConte in the description of the genus, has completely escaped

Tribe XII.—AGALLISSINI.

A tribe composed of two genera which are remarkable for having the epipleuræ strongly sinuated near the humeri. Head small, front short, vertical in Zagymnus, quadrate, oblique in Agallissus; eyes finely granulated, deeply emarginate; antennal tubercles not elevated, antennæ slender, shorter than the body in both sexes, finely punctulate, and sericeous, 11th joint feebly appendiculate; mandibles small, stout, acute, genæ moderately short; mentum transverse, of the usual form, entirely corneous; palpi short, equal, not dilated. Front coxæ small, not prominent, cavities rounded, open behind; middle coxal cavities angulated externally, mesosternum suddenly declivous in front. Epimera of metathorax very wide in front, gradually narrowed behind; ventral segments slightly decreasing in length; legs short, slender, thighs not clavate, spurs small, 1st joint of hind tarsi but little longer than the 2d.

The prothorax is rounded on the sides, not transverse, the elytra are wider at base than the widest part of the prothorax, and the humeri are rather prominent, as in many Lepturidæ. The scutellum is obtusely rounded behind, the mesonotum is smooth and polished, with a large, very fine stridulating plate. Flying hairs of moderate length are seen over the general surface of the body, and on the legs.

Two species occur in our fauna, *Agallissus gratus* (Cryptopleura grata *Hald.*) from Texas and Northern Mexico; shining black, sparsely punctured, with the elytra narrowed behind, truncate and finely serrate at tip, ornamented with yellow spots, of which the basal pair are elongate: and *Zagymnus clerinus* from Florida, opaque black, very coarsely and densely punctured; prothorax red, with faintly indicated dorsal smooth spots; elytra parallel on the sides, rounded at tip, with a round basal spot, and two broad transverse bands bright scarlet. Length 13 mm.

This seems the nearest approach made by the genuine Cerambycidæ to the Rhagium group of Lepturidæ. It is, however, quite an isolated form, without special affinities in any direction.

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him: it is quite obvious in all the specimens examined, though in *Eu. picipes* the two parts of the eye are connected, as in Tetropium, by a line of corneous material, without lenses; even this line is wanting in *Eu. pini*, so that the eye becomes as completely divided as in Tetraopes.

Tribe XIII.—**ATIMIINI.**

One genus with two species constitutes this group, which has lost entirely the characteristic form of the Cerambycinæ, and resembles a rather stout Lamiine. The head is broad and short, the front perpendicular; the eyes large, deeply emarginate, almost in fact divided, and not very finely granulated; labrum transverse, ciliated with very long hairs; mandibles slender and acute; mentum trapezoidal, corneous; palpi unequal, scarcely compressed, truncate at tip, the maxillary about half longer than the labial. Antennæ slender, shorter than the body in both sexes, 11-jointed; 2d joint less than half as long as the 3d, which is a little shorter than the 4th, punctured and pubescent, not sericeous. Front coxæ rounded, somewhat large, widely separated by the prosternum, cavities not angulated externally, completely closed behind; middle coxæ widely separated by the mesosternum, which is truncate behind and gradually declivous in front; coxal cavities slightly angulated externally, completely closed by the sterna; metathoracic episterna moderate, neither wide nor narrow; metasternum unusually deeply emarginate behind, for the reception of the acute intercoxal process; ventral segments slightly decreasing in length, the 5th in ♀ a little longer than the 4th and truncate. Legs short, thighs moderately clavate, tibiæ with small spurs, hind tarsi with 1st joint equal to two following united.

The scutellum is subquadrate, rounded behind; the mesonotum has a large stridulating surface, divided by a dorsal furrow, as in Leptura and allied genera.

The body is densely clothed with long, coarse, luteous hair, with some denuded spots on the thorax and elytra; the former is quadrate, transverse, scarcely rounded on the sides, and coarsely punctured, the latter a little broader, truncate at tip, more finely and very sparsely punctured, with several rows of very distant larger punctures. The front tibiæ are without any vestige of the oblique groove seen in Lamiæ.

Atimia confusa (Clytus conf. *Say*) occurs in the Middle States and Canada; and *A. dorsalis* Lec. on the Pacific slope.

Tribe XIV.—**DISTENIINI.**

This tribe, represented only by *Distenia undata* in our fauna, exhibits so many peculiarities that it may well be viewed as a survivor of the synthetic types of former times. The combination of the form of eyes of Prioninæ, with the ligula of the same sub-family, large globose front coxæ (as in Achryson), long slender antennæ; spinose prothorax and elytra (as in many Cerambycoides), a divided stridulating organ (as in Lepturoides), with a peculiar form of mandibles, not known to me otherwise in the whole family, is very remarkable. The form of body and general appearance is intermediate between a slender Cerambycoid and a Lepturoid. Lacordaire has very properly given to this type, as the 3d division of the true Cerambycinæ, the greatest prominence it could have in his system.

Body elongate, head large, horizontal; eyes transverse, large, rather coarsely granulated, feebly emarginate, not embracing the base of the antennæ; neck moderately constricted; front very short, suddenly declivous between the antennæ, epistoma large, quadrate, horizontal, labrum large, broader than long. Antennæ long, setaceous, 1st joint as long as the head, comparatively slender, 2d joint small, but with its condyle very much protruding from the 1st joint; following joints equal in length, pubescent, not sericeous, without distinct sensitive spaces, fringed beneath with long, fine, close lying hairs, which extend far beyond the end of each joint, from the 4th to the 10th. Palpi very unequal, maxillary with the last joint elongate triangular, rounded at tip, not impressed, labial shorter, last joint thick, rounded triangular. Ligula large, corneous, feebly emarginate in front, supports of palpi small, widely distant. Mandibles thick, curved, chisel-shaped at tip, apical edge vertical, sharp, straight. Prothorax with dorsal elevations, and acute lateral spine, constricted near apex and base, which are truncate. Scutellum rounded behind, mesonotum with large stridulating plate, divided by a smooth dorsal stripe. Elytra wider in front, gradually narrowed from the humeral angles, bispinose at tip. Prosternum very narrow between the coxæ, which are very large, globose, and prominent, cavities widely open behind, not at all angulated externally. Mesosternum rather wide, parallel, emarginate behind, coxal cavities narrowly angulated externally, but closed by the contact of the sternal pieces. Episterna of metathorax long and narrow, nearly pointed behind; scent pores not very distinct, though the insect has an offensive odor when alive. Hind coxæ rather convex, though distinctly separated. Ventral segments nearly equal in length, 5th in ♂ semicircularly emarginate at tip. Legs slender, hind pair longer, middle tibiæ with a singular oblique groove on the outer face, below the middle; tibial spurs distinct; 1st joint of hind tarsi as long as the two following.

Tribe XV.—**DESMOCERINI.**

This tribe is represented by three species of Desmocerus, *D. palliatus* in the Atlantic, and two others in the Pacific States. Though by the large conical and contiguous front coxæ, and the divided stridulating surface of the mesonotum it belongs to the Lepturoid series, it differs remarkably from the other genera by the much smaller and stouter mandibles, which are not at all fringed on the inner margin. The ligula is large, membranous, and bilobed, though less deeply so than in Lepturini; the palpi are short, not dilated; the mentum is large, trapezoidal, and the gular process very short. The eyes are finely granulated, nearly rounded, suddenly and deeply emarginate towards the base of the antennæ, which are 11-jointed, with the joints 3–5 thickened at the end, and the outer ones velvety black; the vertex is prominent, deeply sulcate, suddenly perpendicular in front of the antennæ, front horizontal, advancing as in other Lepturoides (and also in Distenia) between the base of the mandibles; labrum large, not emarginate. Prothorax gradually wider behind, obtusely angulated on the sides, hind angles prolonged, acute; scutellum rounded behind, stridulating plate of mesonotum large, divided by a smooth furrow. Elytra parallel, coarsely punctured, obliquely rounded behind. Prosternum very narrow between the coxæ, which are large and conical with the cavities angulated externally and open behind; mesosternum narrow, subemarginate at tip, coxal cavities widely open externally; episterna of metathorax wide, subparallel, suddenly narrowed behind. Hind coxæ prominent, contiguous at the inner side; ventral segments subequal; legs slender, tibial spurs moderate, tarsi rather broad, hind pair with 1st joint scarcely equal to the two following united.

In the ♂ the 5th ventral segment is slightly emarginate at tip, and the antennæ are stouter. The insects are found on species of Sambucus.

Tribe XVI.—NECYDALINI.

Head large, suddenly, but not very deeply constricted far behind the eyes, which are finely granulated, large, oblique, deeply emarginate; the front is very large, quadrate, and vertical, the genæ long, and the hypostoma limited each side by an oblique ridge; the antennæ are inserted high up on the top of the front between the eyes; the mandibles are small, stout, pointed, and fringed with hair on the inner margin; the palpi are very short, the last joint oval and deeply impressed in Ulochætes, bell-shaped and feebly impressed in Necydalis. Antennæ filiform, longer in ♂; 2d joint small; 3d and 4th united not longer than the 5th in Ulochætes; 3d and following joints equal in Necydalis. Prothorax deeply constricted before and behind, and tuberculate on the sides. Scutellum elongate, triangular; stridulating plate of mesonotum large, undivided. Elytra very short, dehiscent, separately rounded at tip; dorsal segments exposed, entirely corneous; wings not folded at tip, but lying straight along the abdomen. Prosternum very short in front of the coxæ, narrow between them, coxæ large, conical, prominent, nearly contiguous, cavities angulated externally, closed behind; mesosternum subtriangular, truncate behind; coxæ prominent, cavities open externally; metathoracic episterna wide in front, narrowed behind; hind coxæ prominent, nearly contiguous. Abdomen gradually narrowed behind and nearly pointed in ♀, slightly thicker at the extremity in ♂; ventral segments equal in length, 5th in ♂ broadly emarginate. Legs slender, hind pair much longer, tibial spurs small, tarsi narrow, 1st joint elongate, not brush-like beneath, in front pair equal to 2d and 3d united, in middle pair equal to all the others united, in the hind pair much longer.

This tribe is represented in our fauna by *Necydalis mellitus* Say in the Atlantic, two species of the same genus, and *Ulochætes leoninus* in the Pacific States. The latter is a large, robust, and very hairy insect, which is well figured in the Pacific R.R. Explorations, vol. xi. pl. 2, f. 12.

The undivided stridulating plate is an exception in the Lepturoid series, to which we have attached this remarkable tribe, and with which it has very strong relations. It would perhaps be better to view it as representing a separate series, in which might be placed various foreign tribes in which the wings are not folded at the end. In this connection, it is important to observe that in Stenopterus and Molorchus, which have abbreviated elytra, the wings are not straight, but folded in the usual manner.

Although the under surface of the head is limited each side by a line, as in other Lepturoides, the line is less defined and the mentigerous process is not more developed than in Cerambycoides, and the mentum has the short transverse form so frequent in that series, and totally unlike the ordinary Leptura type.

Prof. Lacordaire describes the front coxal cavities as open behind, but they are very evidently closed in *N. mellitus.*

Tribe XVII.—**ENCYCLOPINI.**

The head is quadrate, suddenly but not strongly narrowed and constricted far behind the eyes (so that the neck is very short); front large, quadrate, nearly vertical, eyes finely granulated, obliquely emarginate, with the antennæ inserted high up on the front near the emargination; antennæ 11-jointed, slender, with 4⅔ joints punctured, the rest sericeous, genæ rather long; mandibles small, acute, fringed with hair on the inner margin; labrum rather large; palpi moderate, unequal, last joint rounded triangular; hypostoma very distinctly defined each side, mentigerous process short, broad, distinct, mentum large, trapezoidal; prothorax constricted before and behind, wider at the base, tuberculate on the sides. Scutellum small, triangular, mesonotum in Encyclops punctured and hairy, with a very narrow median smooth space, which is carinated, but does not appear to be stridulating; in Leptalia the stridulating surface is large, and divided by a fine dorsal groove; in Pyrotrichus not examined. Elytra elongate, parallel, separately rounded in Encyclops, feebly truncate in Pyrotrichus. Front coxæ conical prominent, nearly contiguous, cavities angulated, open behind; mesosternum triangular, coxal cavities open externally; metathoracic episterna narrow, pointed behind; hind coxæ not prominent; ventral segments nearly equal, the 1st a little longer, the 5th a little shorter. Legs slender, hind pair longer, tibial spurs small; tarsi in Encyclops slender elongated, 1st joint of all much longer, and on the hind tarsi without brush of hair beneath; in Leptalia the first joint of hind tarsi is sulcate, with a line of pubescence each side; in Pyrotrichus wider, with usual covering beneath, and only as long as the 2d and 3d united.

The eyes are very deeply emarginate in Pyrotrichus, rounded, with a small but distinct emargination in Encyclops, feebly emarginate in Leptalia.

The genera may be thus distinguished:—

Tarsi wider, joints 1–3 brush-like beneath. **Pyrotrichus.**
Tarsi slender, 1st joint very long;
  Hind tarsi with basal joint sulcate, brush-like at the sides. **Leptalia.**
  Hind tarsi with basal joint cylindrical. **Encyclops.**

The differences in the tarsi are similar to those observed in the three groups of Lepturini. Pyrotrichus being similar to Rhagium, Leptalia to the Toxotus group, and Encyclops to the genuine Lepturæ.

To Leptalia belongs *Anoplodera macilenta* Mann., a black species from Alaska; A. Frankenhæuseri *Mann.* is a variety with striped elytra and yellow legs; Leptura fuscicollis *Lec.* is a larger variety from Vancouver and California, in which the elytra are also striped, and the legs yellow, sometimes varied with black. The reference to Anoplodera was singularly inappropriate, since the sides of the prothorax are armed with a rather acute tubercle, almost as in Centrodera.

Tribe XVIII.—**LEPTURINI.**

The numerous species composing this tribe are easily recognized by the prominent conical front coxæ, with the cavities angulated externally, open, sometimes almost closed behind; middle coxal cavities widely open externally; the palpi are always unequal, the maxillary elongated, the last joint cylindrical, or triangular, impressed. The head is variable in form, either gradually narrowed behind the eyes, or suddenly and strongly constricted, in either case the neck is long; the front is slightly declivous, and the antennæ are inserted well in front of the eyes, or slightly between them; the eyes are oval, longitudinal, or slightly oblique, entire or emarginated. The mandibles are flat, acute, and fringed on the inner margin. The hypostoma is defined by very distinct lateral lines, the mentigerous process is very distinct, and the mentum flat and trapezoidal. The other characters are variable, the antennæ are usually slender, sometimes subserrate; the prothorax is usually wider at base, sometimes tuberculated at the sides; the elytra usually narrowed from the base, sometimes bispinose at tip, sometimes acute and dehiscent, but usually rounded and dehiscent.

The species occur on flowers, are generally prettily colored, and usually clothed with fine pubescence

- **A.** First joint of hind tarsi with the usual brush of hair beneath (except in certain Acmæops).
    - *a.* Prosternum prominent between the coxæ. **Rhagium.**
    - *b.* Prosternum not prominent, front coxæ conical, protuberant; head not suddenly constricted behind. (TOXOTI.)
        - Eyes large, coarsely granulated; spurs terminal. **Centrodera.**
        - Eyes smaller, coarsely granulated; spurs terminal. **Xylosteus.**
        - Tibial spurs not terminal (eyes variable). **Toxotus.**
        - Eyes finely granulated, tibial spurs terminal;
            - Prothorax acutely armed on the sides;
                - Eyes moderate, feebly emarginate. **Pachyta.**
                - Eyes large, strongly emarginate. **Anthophylax.**
                - Eyes very small, entire. **Piodes.**
            - Prothorax obtusely angulated or rounded on the sides; eyes small, entire;
                - Mesosternum not protuberant. **Acmæops.**
                - Mesosternum protuberant. **Gaurotes.**
- **B.** First joint of hind tarsi without brush-like sole; prosternum not prominent; head strongly and suddenly constricted behind; eyes finely granulated, deeply emarginate. (LEPTURÆ).
    - Last ventral segment of ♂ deeply excavated; body very slender;
        - Elytra strongly sinuate on the sides; antennæ without poriferous spaces. **Bellamira.**
        - Elytra less sinuate on the sides; antennæ with poriferous spaces on the outer joints. **Strangalia.**
    - Last ventral segment of ♂ not excavated;
        - Antennæ with large poriferous spaces. **Typocerus.**
        - Antennæ without poriferous spaces;
            - Hind coxæ not contiguous. **Leptura.**
            - Hind coxæ contiguous. **Euryptera.**

The type and only species of Bellamira is the large and elegant *Leptura scalaris* Say (Toxotus coarctatus *Hald.*) of the Atlantic States.

To Euryptera belongs *Lept. lateralis* Oliv. (distans *Germ.*).

Stenocorus *Geoffroy* is equivalent to Rhagium *Fabr.*

Sub-Family III.—LAMIINÆ.

The members of this sub-family are usually very easily recognized by (1) the prothorax not being margined; (2) the palpi with the last joint cylindrical and pointed; and (3) the front tibiæ obliquely sulcate on the inner side. One of these characters is occasionally absent, but the other two will then, with the general appearance of the insect, make its affinities unmistakable. To the first character there is no exception in our fauna, and only the Tmesisternus group of the other continent; Michthysoma, having the last joint of the palpi triangular, is the only exception in North America to the second character; the third character is lost in some genera of low organization, such as Methia, Dysphaga, etc., which are only feebly differentiated from the Oeme group of Cerambycinæ.

The front is vertical, usually large and flat, rarely shorter and convex; the eyes are usually finely or moderately finely granulated, rarely quite coarsely granulated; emarginated, frequently divided, sometimes (Spalacopsis) with the upper lobe wanting.* The front coxæ are rounded, never transverse, the coxal fissure is frequently open, so that the cavity becomes angulated, but this character, as in Cerambycidæ, is not of great importance; they are closed behind in nearly all, widely open in Methiini, with a tendency to become open in Monohammini. The middle coxæ are entirely closed by the sternal pieces in the higher forms of each series, open to the side pieces in the others, but this character is also of small importance. The metasternum never has scent glands; and the stridulating plate of the mesonotum is always undivided, though frequently narrow. The ventral segments are always 5, and present no remarkable characters. The legs are usually short, sometimes (Monohammus ♂, Dorcaschema) long; middle tibiæ with a tubercle or sinus on the outer face in most genera; tibial spurs short; ungues either *divaricate* (extending in a plane at right angles to the length of the last joint), or *divergent* (not in the same plane, but forming an angle). This character, first observed by Lacordaire, seems to be of great value; in the true Cerambycidæ the claws do not appear to vary to the same extent, but to be slightly movable in nearly all, if not all, the species.

We would arrange the tribes represented in our fauna into series, as follows:—

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* This character has been already noticed in the Clytini, group Anaglypti, v. sup. p. 305.

I. Humeral angles not prominent; metasternum short; wings wanting; front tibiæ sulcate. DORCADIOIDES.

A. Front large, palpi slender;

Support of labrum distinct, coriaceous. I. Dorcadiini.

Support of labrum not visible. II. Monilemini.

B. Front short, oblique, palpi dilated. III. Michthysomini.

II. Humeral angles distinct, wings perfect, elytra entire; front tibiæ sulcate;

A. Body small, elytra gibbous or spinose near the base; prothorax constricted behind, front large inflexed, ungues divergent. CYRTINOIDES.

Front coxal cavities rounded. IV. Cyrtinini.

Front coxal cavities angulated. V. Psenocerini.

B. Body elongated, usually large, elytra not gibbous; scape of antennæ with an apical cicatrix (except Dorcaschema), front coxal cavities angulated, sometimes a little open behind; eyes rather finely granulated; (ungues usually divaricate, but variable). LAMIOIDES.

VI. Monohammini.

C. Ungues divergent;

a. Scape of antennæ with an open apical cicatrix; front coxal cavities angulated, middle coxæ open; eyes finely granulated; body broad. MESOSOIDES.

VII. Mesosini.

b. Scape of antennæ without cicatrix; front coxal cavities variable, middle coxæ open. ONCIDEROIDES.

Front large, flat; front coxæ angulated. XI. Onciderini.

Front convex; front coxæ nearly round; eyes very coarsely granulated. XII. Ataxiini.

Front inflexed, form very elongate. XIII. Hippopsini.

D. Ungues divaricate; scape of antennæ without cicatrix;

a. Front coxæ rounded, middle coxæ closed or nearly so; form usually stout. ACANTHODEROIDES.

VIII. Acanthoderini.

b. Front coxæ angulated, middle coxæ open. POGONOCHEROIDES.

Support of labrum coriaceous. IX. Pogonocherini.

Support of labrum not visible. X. Desmiphorini.

c. Front coxæ protuberant, subconical, cavities angulated; middle coxæ open externally; eyes very finely granulated; form cylindrical, prothorax never armed, rarely tuberculate on the sides. SAPERDOIDES.

Ungues simple (except the outer one of front and middle tarsi in certain ♂). XIV. Saperdini.

Ungues cleft or appendiculate. XV. Phytœciini.

III. Humeral angles distinct, wings perfect, elytra abbreviated; front tibiæ not sulcate, claws divaricate. METHIIDES.

Front coxal cavities angulated, widely open behind; middle coxal cavities open externally; front short, eyes very large, coarsely granulated; oral organs atrophied. XVI. METHIINI.

Tribe I.—DORCADIINI.

This tribe, represented by numerous species in the Mediterranean region of the Eastern continent, has but two representatives, Plectrura and Ipochus, in our fauna; the former, a brownish insect with rows of shining tubercles on the elytra, which at the apex are prolonged into acute serrated cusps; the sides of the prothorax are armed and serrate; it is found in Oregon, Vancouver, and Alaska. Ipochus, a very convex form, clothed sparsely with long erect hair, with bands of white pubescence on the elytra; the prothorax rounded, not armed; found in the southern part of California.

These two genera represent separate groups, the former, Dorcadia, having slender almost pointed palpi, and wide intercoxal process of 1st ventral segment; the latter, Parmenæ, having the palpi stouter, last joint oval, obliquely truncate, and the intercoxal process of 1st ventral segment acute.

The tribe is readily recognized by the absence of wings, the consequently short metasternum, and by the elytra having no humeral angles; the large quadrate vertical front; the support of the labrum coriaceous and distinct. The ungues are divaricate, and the last tarsal joint long. The front coxal cavities are widely angulated, closed behind; the middle coxal cavities widely open externally, with distinct trochantin. The eyes are coarsely granulate. Habits epigæal.

Tribe II.—MONILEMINI.

These are large species of black color, rarely (*Monilema albopictum* White) varied with whitish pubescence; the antennæ are, however, always annulate. They are found in the interior region of the continent, extending into Texas and Lower California.

The characters of the tribe are: front large, quadrate, vertical, support of labrum not visible; wings none, metasternum short, elytra without humeral angles; palpi slender, last joint obtusely pointed.

Additional characters are: eyes rather finely granulated, small, deeply emarginate; front coxal cavities rounded, closed behind; middle coxal cavities angulated externally but closed; ungues divaricate, last tarsal joint less elongated than in Dorcadiini. Intercoxal process of 1st ventral segment wide.

Mr. James Thomson has established Omoscylon on *M. subrugosum* Bland, a species of Lower California in which the prothorax has no lateral spine. The distinction is illusive, as all gradations in the degree of development of the spine are seen, from *M. armatum* where it is large and acute to *M. annulatum* Say, where it is obtuse, and finally to *M. appressum* Lec., and *subrugosum*, where it is wanting.

Tribe III.—**MICHTHYSOMINI.**

This tribe has been established on the very anomalous *Michthysoma heterodoxum* Lec., of which a single specimen has been found in the upper part of Georgia. The head is rather large, the front short, scarcely vertical, the support of labrum visible, coriaceous, labrum small, rounded in front. Palpi very unequal, with the last joint securiform. Antennæ slender, as long as the body, scape rather stout, as long as the 3d joint, rounded at tip, without cicatrix; 3d joint not longer than 4th; eyes small elongate, coarsely granulated, lower lobe narrow. Prothorax as wide as the head, with an acute lateral spine, rather in front of the middle. Elytra elongate not wider than prothorax. Intercoxal process of first ventral segment acute.

Front coxal cavities angulated, closed behind; middle ones angulated, closed externally; thighs strongly clavate, front tibiæ curved inwards and feebly sulcate, middle ones absolutely without tubercle, sinus, or tuft of hair on the outer margin; tarsi less dilated than usual, 1st joint of hind pair equal to two following united; last joint moderate, claws divaricate.

The form of the palpi seems to show an affinity with the African genus Phantasis, but the body is much more elongate, and the other characters do not agree. The head and prothorax are densely punctured and opaque, the elytra more shining, less densely punctured, with hairs proceeding from the punctures.

Tribe IV.—CYRTININI.

This tribe is represented in the Atlantic States by a single species of Cyrtinus (*Clytus pygmæus* Hald.), and is very anomalous in its characters.

The front is large, inflexed, somewhat convex, and the mouth is small; palpi slender, pointed; eyes small, divided, coarsely granulated; antennæ a little longer than the body, scape slender, without apical cicatrix. Prothorax smooth, oval, very convex, constricted at base; elytra with rounded humeri, wider behind, very convex, each with a large acute spine near the scutellum. Wings perfect.

Front coxæ large, rounded, cavities not angulated, closed behind, prosternum scarcely longer in front than behind the coxæ; middle cavities slightly angulated, closed externally; legs stout, thighs strongly clavate, middle tibiæ with a faint sinus on the outer margin; hind tarsi shorter than the tibiæ, 1st joint equal to the two following, last joint rather large; claws apparently movable, as they are sometimes very widely divergent, and almost divaricate, at others quite near together. The metasternum is very little longer than the 1st ventral segment, and the intercoxal process is acute. This is the smallest Lamiine in our fauna.

Tribe V.—PSENOCERINI.

Also represented by a single very small species of Psenocerus in the Atlantic States (*Clytus supernotatus* Say), which resembles a Saperda in its form, as much as Cyrtinus does a Dorcadion.

The characters are nearly the same as in the preceding tribe, except that the front coxæ are angulated externally, and the middle ones open; the middle tibiæ are absolutely without sinus or tuft of hair on the outer margin; the tarsi are wider, and the last joint rather longer, and the claws very widely divergent, though not divaricate.

The front is large and vertical, the support of the labrum coriaceous, the eyes coarsely granulated, divided, the antennæ shorter than the body; scape stouter, and less elongated, without cicatrix, the 3d and 4th joints equal, longer than the others. The prothorax is cylindrical, convex, constricted at base; elytra cylindrical, each with an oval elevation near the scutellum, which is much weaker in small specimens, humeri square. The body is densely punctured, brown or blackish, with the scutellum, a narrow oblique band composed of two spots about the middle, and a wider transverse one behind the middle not extending to the suture, of white pubescence.

The relations of this and the preceding tribe with the Anaglyptus group of Clytini are quite obvious.

Tribe VI.—**MONOHAMMINI.**

We have given to this tribe a greater extension than that proposed by Lacordaire, who restricted it to those genera in which the scape of the antennæ has a large cicatrix, limited by a raised line. The relations between Ptychodes and Dorcaschema are so obvious that they cannot be naturally separated. The tribe as thus enlarged may be defined as follows:—

Front large, vertical, quadrate, flat; genæ long; support of labrum large, coriaceous; mandibles flat; palpi slender, filiform, pointed; eyes somewhat finely granulated, emarginate, lower lobe variable in form. Antennæ longer than the body, very long in the ♂, except in Goes and Cacoplia, scape rather stout, with a terminal cicatrix, except in Dorcaschema. Prothorax with or without a lateral spine, elytra narrowed behind, or cylindrical, wings perfect.

Front coxæ angulated, with distinct trochantin, middle coxal cavities widely open externally; metasternum longer than the first ventral segment (as in all the following tribes); the intercoxal process acute; middle tibiæ with a distinct tubercle on the outer margin; tarsi not elongated, last joint large, claws not fully divaricated, but somewhat movable as in Cerambycidæ genuini. The last ventral segment is truncate in both sexes, but more so in the ♀.

Three groups exist in our fauna.

Legs long, the front pair elongated in ♂, and the antennæ much longer than the body;	
Prothorax with lateral spines.	MONOHAMMI.
Prothorax cylindrical.	PTYCHODES.
Legs equal, not elongated.	GOES.

Group I.—**Monohammi.**

Several species of Monohammus represent this group in various parts of the country; they affect the wood of pine trees. The group is easily recognized by the deeply channelled vertex, very long ♂ antennæ, scape with an apical cicatrix, long slender legs, the front pair much longer in the ♂; the lower lobe of the eyes is a little longer than wide. The prothorax has a strong lateral spine.

The last ventral segment in the ♂ is feebly, in the ♀ more strongly, truncate; the ventral segments are nearly equal in length.

Group II.—**Ptychodes.**

These have also very elongate antennæ, and slender legs, the front pair elongated in the ♂; the vertex is deeply and narrowly channelled; the lower lobe of the eyes is broader than long. The first and 5th ventral segments are longer than the intermediate ones, the last is feebly truncate in the ♂, but more strongly in the ♀. The prothorax is cylindrical.

Our genera are as follows:—

Scape of antennæ with a large well-defined cicatrix;	
Eyes nearly divided.	**Ptychodes.**
Scape of antennæ without cicatrix;	
Elytra rounded at tip.	**Dorcaschema.**
Elytra pointed at tip.	**Hetœmis.**

Group III.—**Goes.**

We include in this group Lacordaire's tribe Batocerini, so far as it is represented in our fauna. Neither the difference in the apical cicatrix of the scape of the antennæ, nor the protuberance of the mesosternum seem to be of tribal value.

The body is more massive and less elongate than in the preceding groups. The vertex is broadly channelled, the lower lobe of the eyes is long in Goes, transverse in Plectrodera; the antennæ are but little longer than the body, and not very different in the sexes; the legs are rather short, equal in length, and not different in the sexes. The ventral segments are nearly equal, and the 5th is more distinctly truncate in the ♀.

Three genera occur in our fauna, all in the Atlantic region:—

Scape of antennæ with a distinctly limited cicatrix;	
Prothorax cylindrical.	**Cacoplia.**
Prothorax with a lateral spine.	**Goes.**
Scape of antennæ with the cicatrix not sharply defined;	
Prothorax with a strong lateral spine.	**Plectrodera.**

Tribe VII.—**MESOSINI.**

This tribe has but a single representative, *Synaphœta Guexi*, in California; a rather large, stout insect clothed with gray pubescence; antennæ annulated, prothorax with two black vittæ, and elytra each with two angulated black bands.

The front is large and quadrate, labral support large, coriaceous; vertex deeply channelled; mouth large, palpi slender, pointed; eyes finely granulated, almost divided, lower lobe nearly quadrate; antennæ longer than the body in ♂, shorter in ♀, scape long with an oblique apical cicatrix; prothorax with a very obtuse lateral tubercle just behind the middle; elytra wider than thorax, nearly parallel, depressed on the back, suddenly inflexed at the sides, broadly rounded behind.

Front coxæ angulated, closed behind, with large trochantin; middle coxal cavities open externally; mesosternum protuberant; metasternum a little longer than the 1st ventral; 2–4 segments nearly equal, 5th in ♂ somewhat emarginate, longer, channelled, and more deeply emarginate in ♀. Legs rather short, equal, middle tibiæ without tubercle or sinus on the outer margin; tarsi short, and broadly dilated, claws divergent.

The species of this tribe resemble in appearance the stouter forms of the next two tribes, but differ by the strongly angulated front coxal cavities.

Tribe VIII.—**ACANTHODERINI.**

With this tribe commences a long series of genera having the claws divaricate; the front is large, quadrate, vertical, mouth large; support of labrum large, coriaceous; palpi slender; antennæ variable, sometimes excessively long in both sexes, sometimes (sub-tribe Acanthoderini) hardly longer than the body; vertex not much excavated, eyes finely or somewhat coarsely granulated, lower lobe nearly quadrate. Prothorax armed or not on the sides, position of spine variable. Elytra rounded or truncate at tip, usually flattened on the disk, rarely (Dectes) cylindrical.

Front coxal cavities rounded, closed behind, usually by a broad corneous space, sometimes (Dectes) very narrowly, so as almost to appear open. Middle coxal cavities closed externally; legs moderate, thighs usually strongly clavate, middle tibiæ with a tubercle on the outer margin, hind tarsi sometimes short, sometimes elongated.

Sub-tribes are indicated as follows:—

Scape of antennæ clavate.	ACANTHODERINI.
Scape of antennæ nearly cylindrical, slender.	ACANTHOCININI.

Sub-Tribe 1.—**Acanthoderini.**

The scape of the antennæ is gradually thickened towards the tip, and shorter than the 3d joint, without apical cicatrix. The prothorax is armed with dorsal tubercles, and the lateral spine is large, acute, and situated about the middle; 1st joint of hind tarsi not much longer than the 2d; ventral segments 2–4 shorter in the ♀, 5th broadly emarginate in ♂, rounded in ♀.

We refer all our species to Acanthoderes, having the front tarsi of ♂ broader, and fringed with very long hairs. Ætheopoctines *Thomson*, founded upon *A. Morrisii* Uhler, does not seem to be sufficiently distinct; the lower lobe of the eyes is smaller, oblique and oval, rather than quadrate.

In *A. quadrigibbus* the eyes are less coarsely granulated than in the others; it and *A. decipiens* Hald. are referred by Lacordaire to Psapharochrus *Thomson*, but the genera seem to be founded on very feeble characters, and moreover not to be constant even in those differences.

Sub-Tribe 2.—**Acanthocinini.**

The scape of the antennæ is elongate and slender, scarcely thickened at tip, without apical cicatrix. The prothorax is either tuberculate on the disk, or not; the lateral spine is sometimes placed at the middle, sometimes behind the middle, sometimes even very near the base. The genera indicate three groups as follows:—

Lateral tubercle of thorax at the middle; tarsi broad.	LAGOCHIRI.
Lateral tubercle behind the middle; tarsi slender, except in *Mecotetartus*;	
Females without elongated ovipositor.	LIOPI.
Females with elongated ovipositor.	ACANTHOCINI.

Group I.—**Lagochiri.**

In this group the lateral tubercle of the thorax is at the middle; the females without ovipositor. The pro- and mesosternum are moderately broad, the former channelled, the latter truncate at tip. The tarsi on all the feet are broad, the first joint of hind tarsus not quite as long as the next two. The antennæ are not ciliate.

The above remarks, it may be needless to say, are applicable to the genera of our fauna only. These are known as follows:—

Lateral spine of thorax very prominent, the disk tuberculate, antennæ much longer than the body. **Lagochirus.**
Lateral spine obtuse, disk not tuberculate, antennæ not longer than the body in either sex. **Cœnopœus.**

In the males of both genera the sixth joint of the antennæ is prolonged inwards and with a brush of hairs in *Lagochirus*, which has also the anterior tarsi dilated and fimbriate, and the same tibia fimbriate within near the tip.

Cœnopœus is founded on *Leptostylus Palmeri* Lec.

Group II.—**Liopi.**

From the Lagochiri this group differs in having the thorax angulate, if at all, behind the middle and the tarsi slender.

The lateral tubercle of the thorax, as observed by Dr. LeConte, varies in position from sub-median to sub-basal.

The table of the genera of this tribe, as defined by Dr. LeConte in the first edition of this work, requires some modification by the omission of Lophopœum? and Sternidius, and the introduction of *Mecotetartus* (Eutessus *Lec.*).

The species placed provisionally in Lophopœum seems rather a Pogonocherus allied to *P. oregonus*, but with the lateral spine of the thorax as strong as in *P. crinitus.*

Sternidius is the equivalent of Liopus, and those species formerly under the latter name are added to Lepturges.

Mecotetartus Bates (Eutessus *Lec.*), is added from the next group, in which it had been doubtfully placed by Dr. LeConte, he knowing the males only, while the description by Mr. Bates, published but a few months before, had not yet reached this country.

Dectes is also added to the group as its characters do not warrant a wider separation.

The genera now known in our fauna are as follows:—

Thorax feebly tuberculate or angulate at the sides a little behind the middle; mesosternum broad, first joint of hind tarsi not longer, if as long, as the next two. **Leptostylus.**

Thorax distinctly angulate, usually acutely tuberculate, or with a short spine behind the middle; mesosternum triangular or narrow.

Antennæ without traces of ciliæ beneath, first joint of hind tarsus as long as the next two;

Prosternum narrow but not linear, body without erect hairs. **Liopus.**

Prosternum linear, form cylindrical, elytra with erect hairs. **Dectes.**

Antennæ distinctly ciliate beneath;

Hind tarsi short, first joint not as long as 2–3; antennæ ♂ very long, the fourth joint longer than the entire body. **Mecotetartus.** ?

Hind tarsi slender, first joint as long as the next three; antennæ normal; pro- and mesosternum very narrow;

Elytra without lateral carina. **Lepturges.**

Elytra with distinct lateral carina. **Hyperplatys.**

Group III.—**Acanthocini.**

There is no character separating this group from the Liopi except the presence of an ovipositor in the female.

The genera may be known as follows:—

Body above with erect hairs beside the pubescence;

Mesosternum broad; antennæ not much longer than the body and not ciliate beneath except feebly on the scape. **Urographis.**

Mesosternum narrow; antennæ twice as long as the body and very slender, ciliate beneath. **Graphisurus.** ?

Body above without erect hairs;

Mesosternum moderate; antennæ very long, joints 3–4 at least, densely fringed beneath with short hairs. **Acanthocinus.**

The first two genera belong to the Atlantic region, the last has representation on both sides of the continent.

Urographis is represented by two species in the Atlantic region; Graphisurus by one; and Acanthocinus by four, two in the Atlantic and two in the Pacific region.

Our species of Acanthocinus lead insensibly to Eutrypanus; the two species of the Western slope, *A. obliquus* and *spectabilis* have the sides of the elytra suddenly compressed and declivous, with a distinct carina running from the humeri obliquely backwards; the same thing is observed in a less degree in *A. nodosus*, but very feebly in *Lamia obsoleta* Oliver, which is incorrectly referred by Lacordaire to Graphisurus.

Tribe IX.—**POGONOCHERINI.**

This tribe, as here defined, contains species of small size, and usually with long erect (flying) hairs, in addition to the ordinary pubescence. They are related to Acanthoderini, having, like them, the claws divaricate, the body generally rather stout, and the scape of the antennæ without cicatrix; the front quadrate, with coriaceous support to the labrum. They differ in having the scape of the antennæ rather shorter and stouter than in the group Liopi, to which they bear the strongest resemblance; the antennæ are only a little longer or shorter than the body, the outer joints gradually shorter; the eyes are moderately or very coarsely granulated (Eupogonius); the front coxal cavities are angulated externally, completely closed behind; the middle ones are angulated, but not open externally; the legs are short, thighs strongly clavate in some genera, but not so in Eupogonius and Lypsimena; the middle tibiæ have an external sinus in some genera, and are quite simple in others; the 1st joint of hind tarsi short or only slightly elongated.

The genera of this tribe are dispersed by Lacordaire among his groups, Estolides, Apodasyides, and Pogonocherides; with the exception of Hoplosia, which resembles a Graphisurus, but with the antennæ of Acanthoderes, the genera have a characteristic habitus.

Five groups are indicated:—

Middle tibiæ with external sinus; thighs clavate; vertex concave; antennal tubercles prominent. 2.
Middle tibiæ without external sinus; thighs not clavate; vertex flat or convex; antennal tubercles not prominent. 5.
Middle tibiæ with external sinus; thighs stout, not clavate; eyes coarsely granulate, vertex convex. ZAPLOI.
2. Eyes moderately granulated; scape of antennæ uniformly punctured. 3.
Eyes very coarsely granulated; scape with large punctures intermixed. 4.
3. Lower lobe of eyes elongate. HOPLOSIÆ.
Lower lobe of eyes as wide as long. POGONOCHERI.
4. Lower lobe of eyes broader than long. ESTOLÆ.
5. Eyes coarsely granulated, lower lobe as wide as long; scape of antennæ uniformly punctured. EUPOGONII.

Group I.—**Estolæ.**

The only representative of this group in our fauna is *Estola sordida* from Lower California. The generic determination was made by Mr. H. W. Bates, who possesses a familiar knowledge of tropical American Cerambycidæ, unrivalled by any other student.

Group II.—**Hoplosiæ.**

To this group we would refer *Pogonocherus nubilus* Lec., Proc. Acad. Nat. Sci. Phila., 1862, 39. The eyes are rather finely granulated, the lower lobe elongate; the scape of the antennæ stout, clavate, much shorter than the 3d joint. The lateral spines of the prothorax are large and situated at the middle; there are no dorsal tubercles. The pubescence is gray mottled with black, and there are short, scattered, erect hairs on the elytra; the antennæ are thinly fringed beneath with hairs. The thighs are strongly clavate, and the sinus of the middle tibiæ is distinct; the 1st joint of the hind tarsi is scarcely longer than the 2d. The 5th ventral segment is much larger in ♀, and subtruncate in both sexes.

This insect indicates a genus, which is perhaps identical with the European *Hoplosia.* The mesosternum is parallel and truncate behind; the prosternum in front of the coxæ is well developed and not declivous, so that the head is not retractile.

Group III.—**Pogonocheri.**

The eyes are not coarsely granulated, the lower lobe subquadrate or subtriangular, not elongate; the scape of the antennæ is stout, though less clavate than in the preceding group, and they are fringed with long flying hairs; the prothorax is either armed or not, and has faint dorsal tubercles. The body and legs are clothed with long flying hairs, and tufts of hair are seen on the elytra in Pogonocherus, but in Ecyrus the pubescence is short and close, with a few erect, short hairs proceeding from rows of granules on the elytra, which are carinate on the sides in both genera, sometimes truncate, sometimes rounded at tip. The 5th ventral segment is larger in the ♀, and truncate in both sexes. The thighs are clavate, the middle tibiæ have a small but distinct tubercle on the outer margin;* the hind tarsi are short, with the 1st joint equal to the 2d.

Two genera occur in our fauna.

Flying hairs long; prothorax with lateral spines.	**Pogonocherus.**
Prothorax with feebly rounded sides, pubescence short.	**Ecyrus.**

The second genus resembles in appearance a small Mesosa, but differs essentially in the claws being absolutely divaricate, and fixed in position.

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* Lacordaire states that the middle tibiæ are simple.

Group IV.—**Eupogonii.**

The eyes are very coarsely granulated, with the lower lobe not transverse; they are larger in Lypsimena than in Eupogonius; antennæ not longer than the body, scape feebly clavate, shorter than 3d joint; clothed with long flying hairs in Eupogonius, sparsely ciliate beneath in Lypsimena; prothorax densely punctured, without dorsal tubercles, armed on the side with a small acute spine; elytra sparsely punctured, with irregular mottlings of yellowish pubescence in some species, with only erect hairs in *Eu. subarmatus*. Body and legs clothed with erect hairs, which are usually very long, but shorter in the species just mentioned. Legs short, equal, middle tibiæ without sinus or tubercle; 1st joint of hind tarsi a little longer than the 2d. Last ventral rounded at tip, larger in ♀ than ♂.

Eu. subarmatus bears a deceptive resemblance to Amphionycha, and the first specimen collected being mutilated, was described as belonging to that genus, from which it is abundantly distinct by the coarsely granulated eyes, and entire ungues.

Body with flying hairs;
  Antennæ pilose, joints 5–10 shorter, equal. **Eupogonius.**
No flying hairs;
  Antennæ sparsely ciliate beneath, outer joints very gradually shorter, prothorax unarmed. **Lypsimena.**

Group V.—**Zaploi.**

We have established this group on a very anomalous small species *Zaplous Hubbardi* Lec., found in Florida. It combines the characters of the other groups, as will be seen in the table, to a rather remarkable degree. The following characters will enable it to be readily recognized.

Body small, not very robust, with short prostrate pubescence. Head short, not channelled, eyes deeply emarginate, rather coarsely granulated. Antennæ shorter than the body, scape long, slender, slightly clavate (as in Liopus, etc.), 2d nearly one-third as long as the 1st, 3d and 4th elongate, equal together to the remaining ones united. Prothorax with sides rounded, sometimes feebly angulated; front coxæ widely angulated. Legs short, thighs stout, not clavate; front tibiæ feebly grooved; middle tibiæ with an external sinus. Tarsi short, 1st joint scarcely longer than 2d, last joint long; claws divaricate.

Tribe X.—**DESMIPHORINI.**

The occurrence of *Desmiphora mexicana* Thomson in Texas requires the introduction of this tribe into our fauna. The front is large, the support of the labrum is *not visible*, and the labrum itself is of peculiar form, the basal half is densely pubescent, and the apical half obliquely truncate, presenting an obliquely declivous oval surface, which is finely carinated; the mandibles are large and the head is bent down to touch the prosternum. The eyes are coarsely granulated. The prosternum is short, prominent between the coxæ, and very declivous before and behind. The prothorax is armed with a strong lateral spine. The elytra are parallel and cylindrical, rounded at tip. The front coxæ are angulated externally and closed behind. The mesosternum is protuberant and perpendicular in front; the middle coxæ are angulated, but scarcely open externally. The 5th ventral segment (in ♀) is as long as the three preceding united, and truncate at tip. The legs are short, equal, the thighs not clavate, the middle tibiæ sulcate externally, with a slight protuberance; 1st joint of hind tarsi not longer than the 2d; claws divaricate.

The antennæ (♀) are two-thirds the length of the body, and pilose, the scape rather stout, scarcely clavate, joints 4–11 gradually, but rapidly decreasing in length.

This insect is remarkable for being covered with very dense brown pubescence, with lines and crests of very long, fine whitish hairs looking like mould. Beneath it is very prettily variegated with darker spots each surrounded with a white line. Length 15 mm. The only specimen we have seen was sent from Texas to Mr. A. S. Fuller, and by him to Dr. Horn.

Tribe XI.—**ONCIDERINI.**

With this tribe commences a series in which the front coxal cavities are angulated externally and closed behind, the middle ones open externally, and the claws moderately divergent. The antennæ in the present tribe are longer than the body in the ♂, about as long as the body in the ♀, and the scape is stouter, subcylindrical, nearly as long as the 3d joint, and has no apical cicatrix. The front is very large, quadrate, vertical, and flat, the support of the labrum coriaceous, the mouth large, the palpi slender, last joint cylindrical, obtusely pointed. The prosternum is very short in front of the coxæ, prominent between them, declivous before and behind; mesosternum truncate between the coxæ. Ventral segments equal in length, 5th broadly emarginate in both sexes, and impressed in the ♀. Legs rather stout, equal; thighs moderately clavate, middle tibiæ with a tubercle on the outer margin, hind tarsi with the 1st joint broad, not longer than the 2d, last joint as long as the others united, claws approximate, slightly divergent.

Oncideres cingulatus is remarkable for placing the eggs in small branches of trees, especially hickory, and then cutting through the bark below, so as to kill the branch, which is afterwards broken off by the wind;* it will be remembered that *Elaphidion villosum* has the same curious habit.

Eyes not very finely granulated, lower lobe elongate;
  Antennæ slender in both sexes, vertex flat. **Oncideres.**
Eyes very finely granulated, lower lobe not elongate;
  Antennæ with joints 1–4 thickened and hairy in ♂; vertex deeply concave. **Taricanus.**

The first genus is represented by one species in the Atlantic States, and two in Texas and Arizona; the second by *T. Truquii* Thoms., a Mexican species which occurs in Texas.

Tribe XII.—**ATAXIINI.**

Is represented in our fauna by *Ataxia crypta* (Say). (A. sordida *Hald.*),† a slender insect densely clothed with mottled brown and white pubescence, and remarkable for having the punctures of the elytra arranged in rows, from which proceed black suberect hairs.

The antennæ are as long as the body, slender, annulated, scape stouter, as long as the 3d joint; joints from the 3d diminishing very slightly in length. Front convex, rather broader than long, support of labrum coriaceous, mouth moderate in size, genæ very short; palpi slender, last joint acute. Prothorax as long as wide, with a small, acute, lateral spine; elytra a little wider than the prothorax, cylindrical, rounded or subtruncate at tip. Front

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* Haldeman, Trans. Amer. Phil. Soc., x. 52.

† Erichson considered this insect as *Saperda annulata* and *lineata* Fabr., described from South America. Vide Lacordaire, ix. 599.

coxæ angulated, closed, prosternum not abbreviated in front; mesosternum truncate between the coxæ, cavities angulated, but scarcely open externally. Ventral segments, 1st and 5th a little longer, 5th truncate at tip. Legs moderate, thighs feebly clavate, middle tibiæ without tubercle, hind tarsi with 1st joint nearly as long as the two following, last joint as long as the first, ungues approximate, divergent.

Specimens from the Southern States and Texas have the elytra obliquely subtruncate, and the hairs longer; in those from New Mexico the elytra are almost rounded at tip, and the hairs are shorter. These differences are not of specific value.

Tribe XIII.—**HIPPOPSINI.**

The body is extremely slender, the antennæ very long in the first group, short in the others; the front is very long and inflexed, so that the mouth is near to the prosternum; it is small, and the mandibles are nearly perpendicular to the inflexed front; the support of the labrum coriaceous, the palpi not slender, and the last joint almost conical and pointed. The eyes are coarsely granulated, emarginate or divided; in the latter case, the upper lobe is sometimes (Spalacopsis) wanting. Prothorax long, cylindrical; elytra elongate. Front coxæ angulated in Hippopsis, rounded in the others, closed behind; middle ones open externally, mesosternum truncate between the coxæ. Ventral segments nearly equal, the 1st sometimes longer, 5th broadly truncate. Legs rather short, equal, middle tibiæ with an external tubercle, tarsi as long as the tibiæ, 1st joint of hind pair short, or slightly elongated (Hippopsis), last joint rather long, claws divergent.

Our genera are the following:—

Front coxæ angulated.
Front coxæ rounded; antennæ short. 3.
2. Antennæ very long. **Hippopsis.**
3. Eyes divided. 4.
Antennæ very pilose, scape not longer than 3d joint; eyes emarginate, upper lobe narrow. **Dorcasta.**
4. Both lobes of eyes present; scape of antennæ moderate. **Sicyobius.**
Upper lobe of eyes wanting; scape of antennæ very long. **Spalacopsis.**

Dorcasta *Pascoe* is equivalent to Ægilopsis *Horn*, and one species, *D. cinerea* Horn, occurs in Texas.

Spalacopsis occurs in Florida and Texas; *Eutheia*‖ Guer., *Euthuorus* Duval, was established upon a Cuban species, differing from ours by the antennæ much more hairy, and the scape somewhat longer. These differences do not seem to be generic. Hippopsis is represented by one species in the Atlantic region, and Sicyobius by one in Kansas.

Tribe XIV.—SAPERDINI.

Insects of cylindrical form, of large or medium size, with large, flat, quadrate, vertical front, coriaceous labral support, and finely granulated, deeply emarginate eyes. The palpi are less slender than in the Acanthoderoid series, the last joint more or less oval, truncate at tip. The antennæ are as long as the body, or a little shorter; the scape is nearly cylindrical, a little shorter than the 3d joint, without apical cicatrix; the outer joints scarcely diminish in length. The prothorax is cylindrical, entirely unarmed, and without tubercles; the elytra are wider than the prothorax, cylindrical, usually rounded at tip, rarely (*calcarata*) the suture is armed with a spine, or (*obliqua*) the tip is attenuated and acuminate.

The front coxæ are angulated externally with distinct trochantin, and closed behind; the middle coxal cavities are angulated, open externally, with distinct trochantin. The prosternum is very narrow between the coxæ, and the mesosternum acute behind. The side pieces of the metasternum are very broad in front, and narrowed behind; a character not seen in the preceding tribes. The ventral segments are nearly equal, the 5th somewhat longer, somewhat truncate (♀) or emarginate (♂). Legs moderate, nearly equal, thighs not clavate, middle tibiæ without tubercle or sinus; hind tarsi with 1st joint not much elongated; last joint rather short in general, claws divaricate; the inner one of the front and middle pair in the ♂ of most of our species armed with a rounded lobe or tooth, which is wanting in *S. moesta*, and *concolor*, and in the European species.

The genus Saperda alone is represented in our fauna. Thus far, none have been found on the Pacific slope, except *S. moesta*, a northern species, which extends from Canada to Oregon.

Some of the species are very destructive to cultivated trees, boring into the wood, or destroying the subcortical tissues of the roots.

Tribe XV.—**PHYTŒCIINI.**

This tribe contains all those species in which the claws are similar, appendiculate or cleft in both sexes; the claws are divergent, except in Tetrops and Oberea; in the last-named genus they are divaricate in the front tarsi, and either divergent or divaricate (*O. Schaumii*) on the hind pair; in Tetrops they are divaricate on all the tarsi.

The front is moderately convex, broader than long, the eyes are finely granulated, emarginate or divided; palpi slender, last joint elongate oval, nearly pointed; antennæ shorter, or at most not longer than the body, scape cylindrical, more slender and shorter than 3d joint (Oberea), stouter and nearly equal to 3d joint in the others. Prothorax cylindrical, or obtusely tuberculate on the sides; elytra cylindrical, rounded or truncate at tip. Front coxæ conical, protuberant, cavities angulated, closed behind, separated by very narrow prosternum; middle coxæ open externally, episterna and epimera separate (Mecas, Oberea, Tetraopes), or nearly connate (Tetrops, Amphionycha). Ventral segments nearly equal in our genera, 5th more or less different in the sexes, and usually somewhat longer in ♀. Legs short, thighs not clavate, middle tibiæ simple, hind tarsi with 1st joint not elongated, last joint rather long; claws variable in position as above stated, always appendiculate or cleft.

The side pieces of the metathorax are narrower behind; they are rather wide (as in Saperdini) in the first group, but less developed in the others.

The genera seem to indicate several groups, but without study of the foreign forms it is unnecessary to define them at present, and we have included them in a single table.

Episterna of metathorax wide;	
Epipleuræ indistinct; ungues feebly toothed or cleft.	**Mecas.**
Epipleuræ distinct; ungues broadly appendiculate.	**Oberea.**
Episterna of metathorax moderate;	
Eyes broadly divided; prothorax dilated on the sides;	
Ungues broadly appendiculate.	**Tetrops.**
Ungues cleft.	**Tetraopes.**
Eyes not divided; ungues cleft.	
Antennæ pilose, outer joints suddenly shorter.	**Amphionycha.**

The American species of Tetrops are referable to Phæa *New-*

man, which seems not sufficiently distinct from the European genus to be retained in a natural classification.

The species of Tetraopes are numerous and very similar, being of a bright red color with small black spots on the prothorax and elytra; they live exclusively upon plants of the genus Asclepias.

Tribe XVI.—METHIINI.

This tribe contains the lowest organized of the Lamiidæ; undifferentiated forms, which exhibit strong relationships to Oeme and its allies among the Cerambycidæ.

The body is elongate, the prothorax cylindrical, the elytra shorter than the abdomen, separately rounded at tip, and the wings are extended along the dorsum of the abdomen, and very imperfectly folded at tip.

The eyes are sparsely pilose, very large, coarsely granulated, deeply emarginate; less coarsely granulated and divided in Dysphaga; the front short and perpendicular, labrum obsolete, or connate; mandibles short, but very stout at base, and trigonal; palpi unequal, short, and cylindrical, the labial nearly pointed, the maxillary truncate, with a terminal oval cicatrix or mammilla representing the last joint in Methia; still more feeble and nearly atrophied in Dysphaga. The prosternum is elongate in front of the coxæ, which are conical and prominent; the cavities are *confluent*, separated behind by a very narrow point of prosternum, widely angulated externally and *open behind.* Middle coxæ conical, prominent, contiguous, cavities confluent, widely open externally; hind coxæ nearly contiguous, also prominent. Ventral segments equal in length, cylindrical in Styloxus, with the 5th broadly emarginate, and 6th visible; of softer consistence, 5th longer with a large hairy vulva-like excavation in three (♂) specimens of Methia examined; flat with the segments imbricate at the sides (as in Lampyridæ) in Dysphaga; 5th joint deeply emarginate in ♀, longer in ♂, with the same vulva-like excavation as in Methia, but broader and patulous, so as to become triangular; the abdomen is black in ♀, but yellow in ♂ of Dysphaga.

The legs are moderate in Styloxus and Idœmea, with the thighs clavate; more slender, with the thighs not clavate in Methia; very feeble in Dysphaga; the tarsi are short, and the last joint is as long, or nearly so, as the others united; the claws are small and divaricate.

The antennæ are longer than the body in both sexes; pilose in Methia, sparsely ciliate in the other genera.

Antennæ with 2d joint distinct. 2.
Antennæ with 2d joint obsolete (therefore apparently 10-jointed). 3.
2. First joint of antennæ with a small apical spine, front larger and more vertical, eyes more separated. **Idœmea.**
First joint of antennæ with a stout spine, front short, eyes approximate. **Styloxus.**
3. Eyes emarginate. **Methia.**
Eyes divided. **Dysphaga.**

Methia pusilla Newman, occurs in the Southern States; *Dysphaga tenuipes* (♂ ventralis) Hald., in Pennsylvania, in hickory twigs, *D. lævis* Lec., in Illinois; they are similar in size and form, but the prothorax is coarsely and densely punctured in *D. tenuipes,* while it is shining and only sparsely punctured in *D. lævis.*

Styloxus is founded on a species from Lower California, somewhat larger than *Methia pusilla,* but also of a uniform brown color. Idœmea is established on a much larger Texan species.

FAM. LVI.—**CHRYSOMELIDAE.**

Mentum not inserted upon a peduncle, usually transverse, and not large; ligula usually coriaceous and entire, though sometimes membranous and bilobed; labial palpi 3-jointed.

Maxillæ exposed at the base, feebly developed, bilobed; palpi 4-jointed, cylindrical, usually not slender, but rarely dilated or elongate.

Head either prominent, or concealed under the shield-like prothorax (Cassidini); epistoma usually distinct and well separated; eyes entire, or emarginate on the inner side, finely granulated; mandibles short, robust (larger in some Clythrini); labrum transverse, usually rounded in front.

Antennæ variable in position and form, usually 11-jointed, filiform, serrate, or somewhat clavate; outer joints from 5–11 (Donaciæ) covered with sensitive surface.

Prothorax usually margined at the sides, but not in certain tribes; side pieces not separate in our genera from the prosternum; coxal cavities open or closed, contiguous or separate; prosternum not prolonged.

Mesosternum narrow or wide; side pieces attaining the coxæ.

Metasternum either long or short side pieces.

Elytra usually covering the dorsal segments, sometimes leaving the pygidium exposed (Camptosomes); rarely (in some genera of Gallerucini) smaller, and not covering the greatly enlarged female abdomen; epipleuræ usually distinct.

Abdomen with five ventral segments, varying in proportion.

Anterior coxæ varying in form and position; middle coxæ either contiguous or separate; hind coxæ transverse, contiguous, or separated, not laminate.

Legs usually short, hind thighs frequently enlarged, and in some groups of Gallerucini saltatorial; tibiæ never serrate, usually without spurs; tarsi with the joints 1–3 usually broad, covered beneath with a brush of hair; 3d frequently bilobed; 4th anchylosed closely to the 5th, which has two equal claws of variable form. Rarely (Hæmonia, and Stenopodius) the tarsi are narrow, and the last joint is very long, with large simple claws, suited to grasp subaquatic plants on which they live.

This family is an immense complex, developed to the largest extent in the tropics, though by no means without a respectable representation in temperate and boreal regions. As the function of the Cerambycidæ is to hold the vegetable world in check by destroying woody fibre, the Bruchidæ effect a similar result by attacking the seeds, and the Chrysomelidæ by destroying the leaves. As the cellular and succulent leaved plants have succeeded the drier and more ligneous forms of early geological time, so have the Chrysomelidæ probably attained their highest development in the more recent periods, and it is therefore interesting to note that their relations with Rhynchophora are proportionately more feeble than those of the other two families above mentioned.

Among the species of this family are to be found some of the most formidable Coleopterous pests of Agriculture; but with few exceptions they belong to the tribe Gallerucini. A notable exception, however, is the *Doryphora decemlineata*, the world-known Colorado potato-bug.

In order to make the tables of tribes and genera more intelligible to the student, it will be proper to define the different forms of tarsal claws, which have been used in the classification of this very troublesome family.

The claws are called *simple*, when they have the ordinary pointed form, slightly but not suddenly broader at the base.

They are *cleft* when divided into two acute parts, which may or not be of equal length.

They are *appendiculate* when provided with a square dilatation at the base, and *pectinate* when toothed in a manner already seen in many genera of Carabidæ, and in all Cistelidæ.

In position they may be defined as *connate* when they are united at base; *approximate* when they are inserted near together; *divergent* when without being distant at base they form an angle, as in most Coleoptera; *divaricate* when they are inserted at opposite sides of the last tarsal joint. This last form is already familiar to us in some groups of Lamiadæ.

The tribes are numerous, and group themselves into four categories, to which names have been applied, though they do not seem to be worthy of rank as sub-families, and will therefore not be referred to below:—

Front normal, mouth anterior. 2.
Front inflexed, mouth inferior. (CRYPTOSTOMES.) 10.
2. Middle ventral segments not narrowed; last dorsal segment not exposed. 3.
Middle ventral segments narrowed; last dorsal segment exposed, declivous. (CAMPTOSOMES.) 5.
3. Prothorax not margined. (EUPODA.) 4.
Prothorax margined (exceptions in 8). (CYCLICA.) 7.
4. Prosternum very narrow, claws simple, divergent; 1st ventral segment very long. I. Donaciini.
Prosternum distinct (claws cleft); 1st ventral segment longer than the 2d. II. Sagrini.
Prosternum very narrow; 1st ventral segment scarcely longer than the 2d. III. Criocerini.
5. Antennæ not received in grooves. 6.
Antennæ received in marginal grooves, in the flanks of the prothorax. V. Chlamydini.
6. Front coxal cavities confluent. IV. Clythrini.
Front coxæ separated by the prosternum. VI. Cryptocephalini.
7. Antennæ widely separated at base 8.
Antennæ approximate, inserted on the front. 9.
8. Front coxæ rounded; 3d tarsal joint bilobed. VII. Eumolpini.
Front coxæ transverse; 3d tarsal joint entire. VIII. Chrysomelini.
9. Front coxæ conical, prominent. IX. Galerucini.
10. Head free. X. Hispini.
Head concealed under prothorax, which with the elytra is widely margined. XI. Cassidini.

Tribe I.—**DONACIINI.**

The species of this tribe are graceful and active species, usually of metallic color, which live upon Nymphæa and other water-plants. They are usually gregarious, and may be seen in bright sunshine, flying and alighting on the leaves, very much after the manner of Cicindelidæ. The under surface is clothed with fine hydrofuge pubescence.

The head is prominent, somewhat narrowed behind the eyes, which are entire, convex and prominent, though not very large. The mouth is advanced, forming a short stout muzzle, and the antennæ are inserted upon the front, before the eyes, and are not very distant at base; they are nearly filiform, slender, and half as long as the body. The prothorax is quadrate, not wider than the head; the side pieces are somewhat distinctly indicated, but there is no lateral margin. The elytra are wider than the prothorax, triangular, or cylindrical, with ten rows of quadrate punctures, and a short scutellar one; epipleuræ very narrow, indistinct. Front coxæ prominent, nearly approximated, cavities closed behind, angulated externally. Middle coxæ rounded, separate; hind coxæ widely distant, oval. Legs long, hind thighs frequently clavate and toothed, spurs of front and hind tibiæ sometimes distinct; claws simple. First ventral segment as long as the others united.

The genera are but two, both represented in our fauna:—

Tarsi dilated, spongy beneath.	**Donacia.**
Tarsi narrow, glabrous, last joint very long, claws large.	**Hæmonia.**

Of the second genus, one species occurs in both regions, subaquatic, upon Potamogeton. The species of Donacia are numerous, especially in the northern parts of the Atlantic region.

Tribe II.—**SAGRINI.**

This tribe, represented in the tropics by large and splendidly colored species, consists in our fauna, of but a few degraded and insignificant forms, of dull color.

The head is prominent, not narrowed behind, eyes small, entire, and convex; mouth forming a short muzzle; epistoma large, distinct. Antennæ filiform, or nearly so, situated on the front in advance of the eyes, rather widely separated. Prothorax not wider than the head, of varied form, not margined. Elytra wider than the prothorax, strongly punctured, margined, entire, epipleuræ narrow, but distinct. Front coxæ conical, transverse, prominent, and contiguous, or not prominent and narrowly separated; middle and hind coxæ narrowly separated. Legs moderate, tibiæ without spurs, tarsi dilated, claws variable. First ventral segment as long or nearly so, as the two following united.

Two groups are indicated by our four genera:—

I. Front coxæ not prominent, separated; coxal cavities closed. ORSODACNÆ.
  Prothorax somewhat bell-shaped. **Orsodacna.**

II. Front coxæ prominent, contiguous. SYNETÆ.
  Prothorax with a lateral tubercle; eyes emarginate; front coxal cavities closed; claws appendiculate. **Zeugophora.**
  Prothorax toothed at the sides; eyes entire; front coxal cavities open; claws cleft. **Syneta.**
  Prothorax subangulated at the sides, with prominent front and hind angles; eyes entire; front coxal cavities open; claws entire, divergent. **Thricolema.**

Thricolema has one species in California; the other three genera are widely distributed.

The second group might be equally well placed in the following tribe, but in so restricted a fauna as that here investigated, it is really of but little importance, so long as the characters of the group are made distinct, in which of the larger divisions it is placed.

Tribe III.—CRIOCERINI.

This tribe contains species of rather small size and graceful form; the prothorax is narrower than the elytra, not margined on the sides, and is usually marked with a strong transverse constriction behind the middle. The elytra are regularly punctato-striate, and cover the dorsal segments completely; the epipleuræ are not distinctly defined. The head is somewhat constricted behind, the front forms a broad and short muzzle; the eyes are prominent and rounded; the antennæ are widely distant, inserted in front of the eyes, 11-jointed, and rather stout, though not thicker externally. The front coxæ are conical, prominent, and nearly contiguous; and the cavities are closed behind. The middle and hind coxæ are moderately separated; the 1st ventral segment as long as the two following. The legs are short, not stout, and the claws are simple and approximate, or even somewhat connate at base.

The distinctions between this and the preceding tribe are feeble, and to be found in our genera in the greater length of the 1st ventral segment, and the different form of the claws.

Two genera occur in our fauna, the second is represented by two species of *Crioceris*, introduced from Europe.

Prothorax constricted at the middle.	**Lema.**
Prothorax cylindrical.	**Crioceris.**

Tribe IV.—CLYTHRINI.

This tribe consists of species of compact, stout, subcylindrical form, having the prothorax margined at the sides, fitted closely to the elytra; the front coxæ are transverse, more or less prominent, and have a large trochantin. They are sometimes contiguous, sometimes separated by the prosternum, but the cavities are closed behind. The 1st ventral segment is longer than the 2d; the 4th and 5th are shorter at the middle and connate, so that the pygidium becomes slightly inflexed. The elytra are lobed at the sides, the epipleuræ are apparent only near the base, and the pygidium is exposed. The head is large and deflexed; the eyes are transverse, and sometimes emarginate in front; the antennæ are widely separated, short, serrate, and 11-jointed; the mandibles are sometimes much larger in the male, and the front legs are occasionally elongated in the same sex. The legs are short and stout, the tarsi broad, the claws simple or appendiculate. The antennæ are not received in grooves in our genera.

In the table of tribes given by Mr. Crotch (l. c. p. 19) the front coxæ are represented as prominent and contiguous, but in the table of genera (p. 27) it appears that they are so only in Anomœa and Babia.

Three groups are represented in our fauna:—

Tarsal claws simple;	
Front coxæ contiguous.	CLYTHRÆ.
Front coxæ separated by the prosternum.	MEGALOSTOMES.
Tarsal claws appendiculate.	BABIÆ.

Group I.—Clythræ.

But three species of this group occur in our fauna, belonging to the sub-genus Anomœa of Titubœa; one is found in the

Southern States, and the other two in Texas. The front legs are elongated in the males.

Group II.—**Megalostomes.**

These species are more numerous, and easily distinguished by the front coxæ separated and less prominent, and the simple claws; they belong to the following genera:—

Eyes not emarginate, oval;
  Elytra with rows of punctures. **Euryscopa.**
  Elytra with confused punctures. **Coscinoptera.**
Eyes emarginate, transverse. **Megalostomis.**

To the last-named genus belong *M. pyropya* Lac., and *Coscinoptera major* Crotch, and *C. subfasciata* Lec., found in Texas and Arizona. One species of Coscinoptera extends into the middle Atlantic States; all the others are western or southwestern.

Group III.—**Babiæ.**

The front coxæ are contiguous in two of our genera, and the claws appendiculate. The color is black or blue, with yellow or red elytral spots. The form is stout and convex; the eyes are emarginate.

Front coxæ contiguous;
  Epipleuræ broad in front, not extending beyond the middle of the length, outline broadly sinuous. **Babia.**
  Epipleuræ narrow, not extending beyond the middle of the length, outline very strongly sinuous. **Saxinis.**
Front coxæ separated (feebly in our species);
  Epipleuræ very narrow, not extending beyond the middle of the length, outline broadly sinuous. **Urodera.**

The last genus differs from Babia by the prothorax being lobed at base, which is sinuate and more strongly margined; one species, the Mexican *U. crucigera* extends into Arizona and New Mexico. The other genæ are widely diffused, and represented by very few species.

Tribe V.—**CHLAMYDINI.**

The species of this tribe are robust cylindrical insects of a dull metallic, rarely black color, and covered with large tuberosities. The antennæ are short, serrate, and received in grooves at the sides of the prosternum, and the legs are closely contractile into cavities, so that in repose they present an appearance very similar to the excrement of caterpillars. The tropical species are quite large, but ours are both few and small.

This tribe is distinguished by many peculiar characters, and seems nearly isolated, though more closely related to the Cryptocephalini than to any other.

The eyes are large and emarginate; antennæ widely separated, short, serrate, received in grooves. Prothorax closely applied to the base of the elytra, scutel wider behind and truncate, with a small anterior cusp fitting in a notch of the base of the prothorax. Elytra with large lateral lobes, suture denticulate. Pygidium large, not covered. Prosternum wide in front, narrow behind, separating the small front coxæ, prolonged behind to the metasternum; coxal cavities very narrowly closed both before and behind; epimera and episterna of metathorax not separated. Legs compressed, received in excavations; claws appendiculate. First ventral segment carinate, 5th large.

Two genera occur in our fauna, which, except for convenience, should probably be united:—

Antennæ serrate from the 5th joint at least.	**Chlamys.**
Antennæ serrate from the 6th joint.	**Exema.**

The first genus is represented by several species in the Atlantic region; the second by two in the Atlantic, one of which occurs on the Pacific slope.

Tribe VI.—**CRYPTOCEPHALINI.**

In this tribe the prothorax is margined, closely applied to the elytra behind, so that the form is robust and compact. The elytra do not cover the pygidium. The eyes are large, and more or less emarginate; the antennæ widely separated, long and slender in general, though sometimes (Monachus) shorter and subserrate. The prosternum is wide, the front coxæ are rounded, not prominent, and entirely inclosed; the middle coxæ are widely separated, and the hind ones are transversely oval, and also widely separated; the intercoxal process is wide, the 1st and 5th ventral segments longer than the others. The elytra have narrow epipleuræ, and are only moderately sinuate at the sides; the side pieces of the metathorax are large. The legs are moderate, the front ones frequently elongated, with thickened thighs; tarsi dilated, claws usually simple, in some of the smallest species appendiculate.

Small insects found on leaves of trees, usually of prettily variegated colors, spotted or striped, and very rarely pubescent.

Three groups are indicated, but as the genera are but few in our fauna, it is scarcely necessary to enlarge upon them :—

	Claws simple.	2.
	Claws appendiculate.	Monachi. 5.
2.	Prothorax not margined at base, crenulate.	Cryptocephali. 3.
	Prothorax margined at base, not crenulate.	Pachybrachi. 4.
3.	Front edge of prothoracic flanks sinuous or toothed	subg. **Bassareus.**
	Front edge of prothoracic flanks straight.	**Cryptocephalus.**
4.	Prosternum flat in front, depressed behind.	**Griburius.**
	Prosternum feebly channelled.	**Pachybrachys.**
5.	Prosternum longer than wide.	6.
	Prosternum wider than long.	**Monachus.**
6.	Antennal joints 6–11 wider.	**Diachus.**
	Antennal joints 7–11 wider.	**Triachus.**

One of the species of Diachus, *chlorizans*, seems allied to the genus *Prasonotus* Suffr., while *Triachus basalis*, perhaps, represents the South African genus *Achænops* Suffr.

Tribe VII.—EUMOLPINI.

Body oblong, convex, rarely rounded or oval, usually metallic, sometimes testaceous or spotted. Head moderate, deflexed, front wide, eyes more or less emarginate; antennæ filiform, or slightly thicker externally, usually long; widely separated at the base. Prothorax generally with distinct lateral margin, which is, however, rarely effaced. Pygidium covered by the elytra, which are rounded at tip. Front coxæ separated by the prosternum, globose, cavities closed behind. Legs moderate, the front ones sometimes elongated; tarsi broad, 3d joint deeply bilobed, claws appendiculate or bifid in our genera.

The groups into which this tribe divides itself are quite numerous, and form a very involved complex. But few of the genera are represented in our fauna, so that in the subjoined table the definitions given to the genus will frequently apply to the entire group.

For such a limited fauna as is here treated, the table given by Crotch (Proc. Acad. Nat. Sci., 1873, p. 33) is more available than the material obtained by a condensation of the arrangement adopted by Chapuis (Gen. Col. x., p. 229–350). We have, however, modified the former, so as to make the sequence of genera somewhat more regular.

	Prothorax with distinct postocular lobes beneath.	2.
	Prothorax with anterior margin straight beneath.	10.
2.	Prothorax not margined at the sides.	3.
	Prothorax with distinct side margin.	7.
3.	Prosternal sutures obsolete.	4.
	Prosternal sutures distinct.	6.
4.	Front thighs simple.	5.
	Front thighs strongly toothed.	**Trichotheca.**
5.	Prothorax transverse, less convex.	**Xanthonia.**
	Prothorax cylindrical, convex.	**Fidia.**
6.	Head without supraocular lines.	**Adoxus.**
7.	Body pubescent or squamose, middle and hind tibiæ not toothed.	8.
	Body glabrous.	9.
8.	Sides of prothorax entire, tibiæ deeply sulcate, expanded at tip.	**Glyptoscelis.**
	Side of prothorax toothed, tibiæ not expanded at tip.	**Myochrous.**
9.	Tibiæ deeply sulcate, antennæ thickened toward the end; claws, middle and hind tibiæ not toothed.	**Chrysochus.**
	Tibiæ not sulcate, antennæ long, filiform; claws, middle and hind tibiæ not toothed.	**Tymnes.**
	Tibiæ sulcate, antennæ thickened toward the end; middle and hind tibiæ toothed toward the tip.	**Paria.**
10.	Head with deep supraocular and frontal lines.	11.
	Head without supraocular lines.	12.
11.	Body glabrous, posterior tibiæ toothed.	**Metachroma.**
	Body pubescent, posterior tibiæ not toothed.	**Graphops.**
12.	Thorax margined at base.	13.
	Thorax not margined at base.	**Chrysodina.**
13.	Antennæ with 2d joint shorter than 3d.	**Colaspis.**
	Antennæ with joints 2–5 nearly equal, 6–11 wider and larger.	**Metaparia.**

The last three genera exhibit relations in different directions with the preceding and following tribes. Chrysodina, by its contracted convex body is related to the Lamprosomides, a tribe not represented in our fauna. Metaparia by its oblong form is not dissimilar to the Clythrini, while Colaspis, by its general appearance approaches the next tribe. In addition to the characters given in the table, we may mention that the protean, and almost irrecognizable *Colaspis tristis* differs from the other species in the antennæ being shorter, with the last five joints more thickened, thus approaching, as it does in form, Chrysodema, and differing chiefly by the prothorax margined at base. Metaparia has the last five joints or antennæ more enlarged than any other genus in our fauna. The group Colaspis (Colaspides) is defined by Chapuis as having the sides of the prothorax undulated. This is the case in our species with coarse sculpture, but is not so in *C. picipes* and *tristis*, which we suspect will properly find their place in genera in other groups. As, however, both the groups and genera seem to have been unnecessarily multiplied in this family, we will leave this subject for future investigation. The genus described by Mr. Crotch, as Typophorus, corresponds with *Tymnes* Chapuis, of the above table, and Heteraspis‡ *Lec.* with *Graphops.*

Tribe VIII.—**CHRYSOMELINI.**

The species of this tribe are of moderate, rarely small size, oval and convex in form, and usually of metallic or variegated colors, differing in arrangement according to the genera. The antennæ are always widely separated, never very long, and are moderately thickened towards the end. The eyes are moderate, not prominent, feebly emarginate. The palpi are frequently dilated at tip and truncate. The side margin of the prothorax is always well defined; the front coxæ are transverse and widely separated, the coxal cavities are closed (Timarcha and Entomoscelides), or open in the other genera. The elytra have distinct epipleuræ, and cover entirely the pygidium. The abdomen is composed of five ventral segments, separated by straight sutures, and are nearly equal. The tibial spurs are always inconspicuous, and except in rare instances (Gastroidea, Phyllodecta) the 3d tarsal joint is not lobed, and at most slightly sinuate at the distal margin; the claws are variable in form.

The groups represented in our fauna are as follows; and the sequence of genera is somewhat different from that represented by Mr. Crotch in the memoir already cited.

	Anterior coxal cavities closed.	2.
	Anterior coxal cavities open.	3.
2.	Metasternum short.	I. Timarchæ.
	Metasternum long.	II. Entomoscelides.
3.	Claws toothed or bifid.	4.
	Claws simple.	III. Chrysomelæ.
4.	Tibiæ dilated and toothed near the tip.	IV. Gonioctenæ.
	Tibiæ not dilated and not toothed.	V. Phyllodectæ.

Group I.—**Timarchæ.**

This group is represented by two species in Oregon, extending into California and British Columbia. They are oval, convex, black, or slightly bronzed insects of coarse sculpture, and are easily known by the very short metasternum, the absence of wings, and the closed front coxal cavities. *Timarcha intricata* has been reported as extending to Western Kansas, but the locality needs confirmation. The genus is well represented in Europe and Asia.

Group II.—**Entomoscelides.**

The body is elongate-oval, winged, with long metasternum and closed front coxal cavities; the tibiæ are gradually, but not strongly dilated at the tip, and the outer face is deeply concave, and the distal edge is obtusely angulated; the claws are simple.

One species, *Entomoscelis adonidis*, extends through the boreal parts of both continents. It is black, with the upper surface in great part brownish-yellow, with the middle of the prothorax, a lateral dot, a wide elytral stripe and the suture black; the elytra are densely rather finely punctured.

As the preceding group tends towards certain apterous species of Chrysomela, so does the present to other forms of the same genus, and to Plagiodera.

Group III.—**Chrysomelæ.**

The species of this group are easily recognized by the metasternum, which is at least as long as the 1st ventral segment, even in the apterous forms which inhabit high mountain regions; the claws are simple; the sides of the prothorax are sometimes thickened, sometimes not. The genera are, as at present recognized, very indefinite, and from a careful study of our species we are inclined to recognize only the following:—

	Tarsi with 3d joint entire or scarcely emarginate.	2.
	Tarsi with 3d joint emarginate or bilobed.	4.
2.	Prothorax margined at base; 3d tarsal joint not bilobed.	3.
	Prothorax not margined at base; 3d tarsal joint bilobed.	**Prasocuris.**
3.	Last joint of palpi short, truncate.	**Doryphora.**
	Last joint of palpi dilated.	**Chrysomela.** ✓
4.	Third tarsal joint emarginate, sides of prothorax not thickened, tibiæ not grooved externally, except at the tip.	**Plagiodera.**
	Third tarsal joint emarginate, sides of prothorax not thickened, tibiæ grooved externally.	**Gastroidea.**
	Third tarsal joint deeply bilobed, sides of prothorax usually thickened, tibiæ grooved externally.	**Lina.**

Dr. Chapuis states (Gen. Col. Lacordaire, x. 375) that the 3d tarsal joint, in Lina, is broad and entire, but we find it deeply bilobed in all of our species, including *L. tremulæ*, which is common to both continents.

There has been an objection, which we think is ill founded, on the part of several European systematists, to receiving the North American species, placed by Mr. W. F. Rogers (Proc. Acad. Nat. Sci., 1856, 30), in *Doryphora*. The species of *Doryphora* are commonly conceived to be tropical insects, in which the mesosternum is more or less produced forwards. This character, as we know in *Anomala* of the Scarabæidæ, has small significance, and we would therefore prefer, in our desire to avoid unnecessary multiplication of genera, to regard in this family and tribe, the palpi as of more consequence than the mesosternum for the definition of genera. We do this with the less reluctance, because we do not observe in our species any particular transition between the two sets of forms to which we ascribe the generic names above given.

The species of *Chrysomela* may be divided into sub-genera as follows, according to Mr. Stal's monograph of the Chrysomelæ of America.

Last tarsal joint with a tooth beneath; claws approximate (elytra with labyrinthine spots or stripes) ZYGOGRAMMA.
Last tarsal joint not toothed;
  Prothorax with simple side margin (elytra with labyrinthine spots or stripes). CALLIGRAPHA.
  Prothorax with thickened sides (elytra without spots). CHRYSOMELA.

Group IV.—**Gonioctenæ.**

This group is represented in our fauna by two species of *Gonioctena*. They are oblong oval insects of moderate size (5–6 mm.). The elytra are punctured in striæ, dull yellow, with black spots; the prothorax is also yellow, spotted with black. The tibiæ are obliquely and sinuately truncate at the apex, and acutely toothed on the outer margin. The 1st and 3d joints of the tarsi are broad and spongy; the 2d joint is smaller and less spongy; the claws are broad nearly to the tip, where they are obtusely toothed. The southern limit of these species is Lake Superior.

Group V.—**Phyllodectæ.**

This group is separated from the preceding by the front tibiæ being slender, neither toothed nor produced at tip, and by the tarsi having the 3d joint much wider and larger than the 1st and 2d, and deeply bilobed.

But one species, *Phyllodecta vulgatissima*, represents the group in our fauna, and although widely diffused in the Atlantic region, may perhaps have been introduced in commerce.

Tribe IX.—GALERUCINI.

The species of this tribe are very numerous, and sometimes in consequence of great variation of color and sculpture, quite difficult to define. They are one of the most powerful agents of Coleopterous type for the repression of redundant vegetation, especially in the tropics, where they acquire a splendor unknown in the temperate zones.

The tribe is well defined by the insertion of the antennæ, which in our genera are placed upon the front, between the eyes; they are usually approximate, and the front is generally carinate, with a narrow ridge. The eyes are not emarginate and finely granulated. Head exposed, and prothorax truncate or emarginate in front, with the sides distinctly margined. Scutel always visible. Elytra are rarely shorter (Metacycla) than the abdomen. Prosternum narrow or invisible between the coxæ, which are prominent and conical, and have the cavities sometimes open, sometimes closed, always transversely oval. Legs variable, tarsal claws variable, rarely simple.

Two sub-tribes are indicated, on the thickness of the hind thighs:—

Hind thighs slender, adapted for walking.	GALERUCINI (gen.).
Hind thighs thickened, adapted for leaping.	HALTICINI.

Sub-Tribe 1.—**Galerucini** (genuini).

The slender form of the thighs may be supplemented by the following characters, in the recognition of the species:—

Mouth usually oblique or porrected; prosternum very narrow, usually invisible between the coxæ; tibiæ usually subcylindrical, tarsi slender, not retractile; spurs feeble.

Although the large number of genera named in this sub-tribe induced Dr. Chapuis to divide it into twenty-seven groups, our limited representation seems to us better adapted for a simple synoptic table, which has been adopted with necessary additions and slight changes in nomenclature from the memoir of Dr. LeConte.

Claws with a broad basal dilatation (appendiculate). 2.
Claws cleft or acutely toothed. 8.
Claws acute, entire, or not according to sex. 11.
2. Antennæ with 1st joint long, 3d longer than 4th; epipleuræ entire; front coxæ contiguous; tibial spurs distinct. 3.
Antennæ with 1st joint moderate in length (front coxæ usually contiguous). 4.
3. Antennæ of ♂ not deformed. **Cerotoma.**
Antennæ of ♂ with 3d and 4th joints deformed. **Andrector.**
4. Elytra with distinct epipleuræ. 5.
Elytra without epipleuræ. **Phyllobrotica.**
5. Epipleuræ not extending to sutural angle. 6.
Epipleuræ extending to sutural tip. 7.
6. Last joint of maxillary palpi small, subulate. **Phyllecthris.**
Last joint of maxillary palpi conical, acute. **Luperus.**
Last joint of maxillary palpi longer; prosternum visible between the coxæ; ♂ with last ventral impressed, 3d and 4th with curved processes; tip of elytra plicate and distorted; epipleuræ wide in front. **Androlyperus.**
Palpi of Luperus; epipleuræ narrow; ♂ with last ventral excavated, and a mammilla in the middle of the excavation; hind tibiæ long, curved, and with a distinct tooth on the inner side at the basal third; prosternum not visible between the coxæ. **Scelolyperus.**
7. Upper margin of epipleuræ thick, obtuse. **Agelastica.**
Upper margin of epipleuræ sharp, prominent; ♀ with abbreviated elytra, inflated abdomen, and no wings. **Metacycla.**
8. Tibiæ not sulcate on the outer side. 9.
Tibiæ deeply grooved on the outer side; prothorax with a posterior transverse groove. **Monocesta.**
9. Front flat, with a median impressed line. 10.
Front carinate; prothorax with two deep impressions. **Diabrotica.**
10. Epipleuræ extending to the sutural angle. 11.
Epipleuræ not extending to the tip. **Trirhabda.**
Front coxal cavities entire. **Adimonia.**
Front coxal cavities open behind. **Galeruca.**
11. Front narrow, not carinate; epipleuræ extending to the sutural angle; pygidium perpendicularly deflexed. **Monoxia.**

Metacycla is *Gastrogyna* of Dr. LeConte's memoir, having been previously described by Mr. Baly. **Galerucella** *Crotch* has been suppressed, since if any division of the genus is admitted, the genera Adimonia and Galeruca previously defined must be adopted.

Androlyperus is founded upon *A. fulvus* Cr., and contains also a beautiful scarlet species, *A. maculatus* Lec., 8 mm. long, from San Diego, California, with two large spots on each elytron black. The head, meso-, and metasternum, scutellum, and antennæ, and legs are also black.

Sub-Tribe 2.—**Halticini.**

This sub-tribe may be sufficiently defined by the large development of the hind thighs, which fit them for leaping. The smaller species are extremely active in this respect, which has caused them in some places to be called plant-fleas. Additional characters, which are of rare occurrence in the preceding sub-tribe, are: the tibiæ are frequently sulcate on the outer side, and the tarsi retractile. Good characters for the separation of groups may also be found in the form of the hind tibiæ; the last joint of the hind tarsi is frequently inflated, a singular character, the biological importance of which has so far eluded human thought.

The front coxæ are usually distinctly separated by the prosternum, and the coxal cavities are sometimes closed behind, and sometimes open; so that this character, usually so important in Coleoptera, here seems to lose its significance. Nevertheless, in consequence of the vast multitude of genera and species, it is one which cannot be neglected in taxonomy, even if it lead to somewhat imperfect results. Chapuis divides them into nineteen groups, of which the following seem to be represented in our fauna; all of which have the antennæ inserted between the eyes:—

Last joint of hind tarsi globosely inflated at tip. 2.
Last joint of hind tarsi simple. 3.
2. Front coxal cavities entire, closed behind. II. Monoplati.
Front coxal cavities open behind. III. Œdionyches.
3. Antennæ approximate; claws simple or appendiculate. 4.
Antennæ distant; front coxal cavities closed; claws bifid.
I. Blepharidæ.
4. Antennæ 11-jointed; hind tarsi inserted at the end of the tibiæ. 5.
Antennæ 10-jointed; hind tarsi inserted on the outer side of tibiæ.
XIII. Psylliodes.
5. Hind tibiæ not toothed. 6.
Hind tibiæ toothed on the outer margin; 1st and 2d ventrals connate.
XI. Chætocnemæ.

6. Apical spur of hind tibiæ simple. 7.
Apical spur of hind tibiæ large, emarginate. XII. Diboliæ.
7. Mesosternum more or less elongate. 8.
Mesosternum short, sometimes concealed. X. Mniophilæ.
8. Prothorax with posterior transverse impression. 9.
Prothorax without posterior transverse impression. 11.
9. Front coxal cavities open. 10.
Front coxal cavities closed, transverse prothoracic impression limited. VII. Crepidoderæ.
10. Transverse prothoracic impression limited each side by a basal longitudinal groove. VI. Lacticæ.
Transverse prothoracic impression not limited. V. Halticæ.
11. Front coxal cavities open. 12.
Front coxal cavities closed. IX. Arsipodes.
12. First joint of hind tarsi moderate; size large. IV. Disonychæ.
First joint of hind tarsi usually very long; size small. VIII. Aphthonæ.

Group I.—**Blepharidæ.**

This group is represented by a single species of Blepharida in our fauna, which by the distant antennæ and general form of body resembles the Chrysomelæ, and differs from them chiefly by the thickened hind thighs and bifid claws.

Group II.—**Monoplati.**

This group and the next are remarkable for the inflation of the distal extremity of the last joint of the hind tarsi, and is distinguished from it by the front coxæ being closed behind. There are many genera in the tropics, especially in South America, but our small representation may be grouped as follows:—

Third joint of maxillary palpi not wider than 2d. 2.
Third joint of maxillary palpi wider than 2d; elytra pilose, striato-punctate. **Hypolampsis.**
2. Elytra punctate in rows. **Phædromus.**
Elytra uniformly punctate. **Pachyonychis.**

No species has yet occurred in the Pacific region. Hypolampsis is represented by three or perhaps four species: Phædromus by *Pachyonychus? parodoxus* Mels., which, by color and form of prothorax, seems to differ from *P. Waterhousei* Clark; Pachyonychis by *dimiaticornis*, which is erroneously described by Clark as having the 9–11 joints of the antennæ pale yellow; from a specimen in Dr. LeConte's collection, and from a MS. drawing of Major LeConte it appears that the 9th joint is black, and that the 10th and 11th are yellow; Hamletia *Crotch* has been suppressed as not different from Pachyonychis.

Group III.—**Œdionyches.**

Several species of Œdionychis, more numerous in the southern part of the Atlantic region, represent this group in our fauna. Some of them vary greatly in color, so that the limits of the species are not well defined.

Group IV.—**Disonychæ.**

These species are of moderately large size, equal to Œdionychis, and are prettily colored, frequently with striped elytra. They differ from the Halticæ (with which they have been associated by Chapuis) by the prothorax having no transverse impression, and from the Aphthonæ by the shorter hind tarsi and greater size. The prothorax has the basal margin oblique each side, and sinuate at the middle; the front coxal cavities are open behind; the tibiæ not deeply sulcate on the outer margin, the spur of the hind pair is distinct but not large; the claws are broader at base, but scarcely toothed or appendiculate. The antennæ are moderately distant at base.

The genus Disonycha is widely diffused, though feebly represented in the Pacific region. The species vary greatly in color.

Group V.—**Halticæ.**

This group is represented in every part of the country by species which, with the exception of *H. rufa*, are of a steel-blue or bronzed color, easily known by the transverse impression near the base of the prothorax, which is not limited each side by a longitudinal plica. The antennæ are moderately distant at base; the hind angles of the prothorax not obliquely rounded, nor the base sinuate; the front coxal cavities open behind; the tibiæ feebly sulcate on outer margin; 1st joint of hind tarsi as long as the two following; claws appendiculate. The genus is commonly known as *Graptodera*.

Group VI.—**Lacticæ.**

Two species of Lactica in the Southern States represent this group. They have the appearance of Œdionychis, but are known by the very deep prothoracic impression, limited each side by a basal plica. The other characters are those of the preceding group.

Group VII.—**Crepidoderæ.**

This group contains species of small size, and of wonderfully active leaping power. The front coxal cavities are closed, and the prothorax deeply impressed behind, usually with a basal plica each side.

The genera are as follows:—

Elytra striato-punctate. 2.
Elytra confusedly, uniformly punctured, posterior impression of prothorax deep, not limited by a basal plica; epipleuræ slightly foveate. **Micraltica.**
2. Posterior impression of prothorax deep, limited by a basal plica. 3.
Posterior impression not limited by basal plica. 4.
3. Antennæ slender. **Crepidodera.**
Antennæ stout. **Cerataltica.**
4. Upper surface strongly punctured, elytra irregularly striate. **Orthaltica.**
Upper surface finely densely punctured, elytra not striate. **Systena.**
Upper surface nearly smooth. **Luperaltica.**

The genera Crepidodera, including *Epitrix*, Systena, and Orthaltica are represented on both sides of the continent; the others only in the Atlantic region. The last genus, by its sculpture and form, has the appearance of pale colored Luperi, and is further remarkable by the ♂ having the 5th ventral segment prolonged behind into a process, differing in form in the two species. Micraltica is established upon *Haltica Burgessi* Crotch, and one other species, *Crepidodera nana* Crotch, from the Southern States. They resemble in miniature Haltica (*Graptodera*), but the prothoracic impression is deeper, and the elytra much more coarsely punctured.

Group VIII.—**Aphthonæ.**

The species of this group are numerous and of small size. The front coxal cavities are open behind; the prothorax is not impressed; the hind legs are frequently longer than usual, the hind tibiæ feebly grooved on the outer side; the spur distinct; the 1st joint of hind tarsi as long, at least, as the others united; the claws simple.

The genera of our fauna are the following:—

Hind tarsi with 1st joint half as long as the tibiæ. 2.
Hind tarsi with 1st joint one-third as long as the tibiæ or less; elytra uniformly punctured. 3.

2. Antennæ with 3d joint longer than 4th; elytra uniformly punctured. **Longitarsus.**
Antennæ with 3d joint equal to 4th; elytra striato-punctate. **Glyptina.**
3. Hind tibiæ depressed at the tip, with the groove bifurcate, spur at the outer angle. **Apthona.**
Hind tibiæ not depressed at the tip, groove feeble, entire, spur at the inner angle. **Phyllotreta.**

Very few of the species are described: Glyptina (unnecessarily united by Crotch with *Batophila*) occurs in Kansas, Texas, Colorado, and New Mexico; the other genera are found on both sides of the continent.

Group IX.—**Arsipodes.**

This group consists of small species, which differ from the Aphthonæ chiefly by the closed front coxal cavities, the stouter form, and the shorter hind legs; the claws are appendiculate. The species in our fauna are not numerous, and may be assigned into genera as follows:—

Elytra deeply punctato-striate; prothorax with basal plicæ. **Mantura.**
Elytra uniformly punctured or feebly punctato-striate; prothorax without impressions. **Podagrica.**

The genera seem to be represented by species only in the Atlantic region. Mantura is a transitional form leading to the Crepidoderæ; the front coxal cavities are nearly, but not completely closed behind.

Group X.—**Mniophilæ.**

These are small broadly rounded species, bearing a deceptive resemblance to Scirtes or Exochomus. The antennæ are very near together, and the front strongly deflexed. The front coxal cavities are open; the mesosternum is transverse and concealed in great part. The hind thighs are very much thickened, the spur of the hind tibiæ is acute; the hind tarsi short, with the 1st joint not elongated, and the claws appendiculate. The tarsi are not inserted at the end of the tibiæ as in the preceding tribes, but at the upper part of a short oblique emargination or truncation. Two genera occur in our fauna, each represented by one species in the Southern States.

Front deflexed. **Sphæroderma.**
Front still more convex, inflexed. **Argopistes.**

The occurrence of the latter genus in Florida is remarkable, as it is otherwise known only from Siberia.

Group XI.—**Chætocnemæ.**

These are small bronzed species with the elytra more or less distinctly striate, the prothorax not impressed; the front coxal cavities entirely closed; the 1st and 2d ventral segments are closely connate; the hind thighs very thick, the middle and hind tibiæ toothed on the outer margin, about one-third from the extremity; the hind tibiæ with a small acute spur; the hind tarsi not elongated, 1st joint as long as the others united; the claws appendiculate. The antennæ are rather widely separated.

Two genera occur in our fauna:—

Size moderately large (5.5 mm.); prothorax with a faint transverse basal impression; elytra with dense coarse punctures arranged almost in rows; claws simple (habitus of Colaspis). **Euplectroscelis.**

Size small; prothorax without impressions; elytra with regular distant striæ of punctures, the inner ones sometimes irregular near the scutel; claws appendiculate. **Chætocnema.**

These genera resemble each other in no important respect except in the form of the hind tibiæ. We have great doubt as to the propriety of associating them in the same group.

Group XII.—**Diboliæ.**

A single genus, Dibolia, is known of this group, and is represented in our fauna by but one species, which extends from the Atlantic to the Pacific. It is easily recognized by the antennæ being very approximate; the head strongly deflexed; front coxal cavities open behind; hind thighs very large; hind tibiæ broader than usual, with the terminal spur large and emarginate; hind tarsi inserted at the end of the tibiæ, not elongated; claws small, appendiculate. The elytra are feebly but regularly punctato-striate.

Megistops, ascribed by Boheman to California, and placed by Chapuis in this group, does not belong to our fauna, but to that of the Pacific Islands.

Group XIII.—**Psylliodes.**

This group also consists of but a single genus, Psylliodes, represented in our fauna by two or three small closely allied species, on both sides of the continent.

They are separated from all the preceding tribes by the antennæ having but 10-joints, and by the hind tarsi being inserted on the side of the tibiæ, very slender, not much elongated, but with the 1st joint longer than the others united; the claws are small and simple; the hind thighs are very thick, and the spur of the hind tibiæ acute but very small.

Tribe X.—**HISPINI.**

This and the next tribe are remarkable by having the anterior part of the head prominent, so that (as in certain Lamiinæ of the preceding family) the mouth is confined to the under surface of the head. The two tribes constituting this series of the Chrysomelidæ differ chiefly in the form of body. In the present instance it is narrowed in front, wedge-shaped, broad and truncate behind, without foliaceous margins; the head is not covered by the prothorax, which is emarginate or truncate in front. In Cassidini the margins of both prothorax and elytra are broadly foliaceous; the former is rounded in front, and entirely conceals the head. The species of these two tribes have the interesting habit, while in the larvæ condition, of covering themselves with a shelter tent composed of their own excrement.

Our genera are few in number, and are represented by but a small number of species; although Dr. Chapuis (Lacordaire, Gen. Col., xi. 263) has indicated twenty groups in this tribe, we think that the small number of types represented in our fauna will warrant us in arranging them in one series, as follows:—

Tarsi with 3d joint broad, more or less bilobed;
  Antennæ distinctly 11-jointed;
    Elytra not costate, striæ finely punctured, body elongate. **Stenispa.**
    Elytra costate, striæ coarsely punctured. **Odontota.**
  Antennæ apparently but 9-jointed, joints 9–11 connate, forming an elongate club. **Microrhopala.**
Tarsi with 3d joint narrow, not bilobed, fourth as long as the others united. **Stenopodius.**

The last genus has been established by Dr. Horn on a very singular species, *S. flavidus*, San Diego, California. It is of a pale yellow color, with a few small black spots on the elytra.

Tribe XI.—**CASSIDINI.**

This tribe is sufficiently separated from the preceding by the expanded margins of the prothorax and elytra; the head in most of the genera is quite concealed under the hood-like anterior margin of the prothorax, and the side margin of the elytra is expanded so as to coapt itself with the prothorax to form an oval or nearly circular outline. The tribe is largely represented in the tropics, but in our fauna comprises only a few species belonging to the following genera:—

Prothorax rounded in front, head quite concealed.	2.
Prothorax less rounded in front, head partially exposed, claws appendiculate.	4.
Prothorax emarginate in front, head visible.	**Porphyraspis.**
2. Prothorax with foliaceous margin.	3.
Prothorax with thickened sides.	**Physonota.**
3. Antennæ not extending beyond the base of prothorax.	**Cassida.**
Antennæ extending beyond the base of prothorax.	**Coptocycla.**
4. Prothorax rounded behind.	**Mesomphalia.**
Prothorax bisinuate at base.	**Chelymorpha.**

We have no certain evidence of the occurrence of Mesomphalia in our fauna, but as it has been collected within a very short distance south of the boundary, it is probably safe to infer that some species will be found north of the Rio Grande.

Some of the species of Cassida and Coptocycla are of a brilliant gold color, which varies with the emotions of the animal and disappears entirely after death.

FAM. LVII.—BRUCHIDAE.

Mentum supported by a peduncle, transverse, more or less emarginate in front, ligula coriaceous, bilobed or divided, the palpi 3-jointed, moderate in length.

Maxillæ exposed at base, bilobed, ciliate within, the palpi 4-jointed, the terminal joint slightly oval.

Head free, usually deflexed, muzzle slightly prolonged, neck often constricted; epistoma distinctly separated by a well-marked suture, labrum well developed; eyes large, more or less emarginate in front, and variably granulated.

Mandibles moderate, depressed, arcuate, often with an inner membranous border.

Antennæ 11-jointed, dentate or pectinate, inserted at the side of the head in front of and near the eyes.

Prothorax margined at the sides, the side pieces of the sternum not distinct, the coxal cavities closed behind, the prosternum separating the epimera on the median line; the coxæ oval, moderately prominent, and with distinct trochantin.

Mesosternum short, separating the middle coxæ, which are oval, not prominent, their cavities partly closed externally by the epimera.

Metasternum moderate in length, never long, the side pieces rather wide; posterior coxæ transverse, narrowly separated.

Abdomen with five free segments, the first longer, the intercoxal process triangular.

Elytra entire or truncate, pygidium always exposed, epipleuræ narrow, not entire; scutellum visible.

Anterior and middle legs of moderate length, the femora not dilated, the tibiæ without spurs; posterior legs larger, the thighs usually dilated and often toothed beneath, the tibiæ often arcuate and broader toward the apex, which is simply prolonged in front or furnished with two free spurs (Spermophagus). Tarsi with the first joint elongate, and with the two following clothed with dense spongy pubescence beneath, the third joint deeply bilobed, fourth closely united with the fifth; claws moderate, broadly toothed at base.

In all systematic works the Bruchidæ are placed near the Anthribidæ of the Rhynchophorous series. Lacordaire (Genera vii. p. 598), while following the example of his predecessors, admits that the characters are rather those of the Chrysomelidæ; so closely are they related that he states his inability to separate the two families sharply. From our knowledge at present the Bruchidæ may be defined as Chrysomelidæ with the submentum distinctly pedunculate. The approximation of this family to the Anthribidæ has resulted from considering Urodon a Bruchide, but the recent studies of M. L. Bedel have convinced him that Urodon is a true Anthribide by the structure of its head and prothorax beneath. The Bruchidæ on the other hand have the structure of normal Coleoptera, and in the closure of the anterior coxal cavities the point of the prosternum attains the posterior margin of the thorax beneath.

The species of this family in their larval stage live in the seeds of leguminous plants, and cause great injury at times to the peas, beans, etc.

The genera known to inhabit our fauna may be separated in the following manner:—

Posterior tibiæ with articulated spurs; posterior coxæ wide, narrowing the first ventral segment. **Spermophagus.**

Posterior tibiæ without articulated spurs; posterior coxæ not narrowing the first ventral segment;

- Anterior coxæ separated by the prosternum. **Caryoborus.**
- Anterior coxæ prominent, contiguous. **Bruchus.**

The last two genera are not considered distinct by Lacordaire and others. Spermophagus with one species occurs in the Atlantic region, the other genera are found on both sides of the continent. Many species of Bruchus have been widely distributed by commerce.

FAM. LVIII.—**TENEBRIONIDAE.**

Mentum variable in form, sometimes entirely closing the opening of the mouth inferiorly; ligula usually visible, sometimes concealed; paraglossæ distinct; labial palpi 3-jointed.

Maxillæ with two lobes, the inner one smaller, sometimes armed with a terminal corneous hook; palpi 4-jointed.

Mandibles usually short, robust, and furnished with a basal tooth; emarginate at tip in the first and second subfamilies; either emarginate or entire in the third.

Eyes usually transverse, with the anterior outline emarginate.

Antennæ generally inserted under the sides of the head, or at least under a small frontal ridge; usually thickened externally; sometimes subserrate; usually 11-jointed, very rarely 10-jointed.

Prothorax with epimera and episterna not separate; coxal cavities separated by the prosternum (except in Dacoderus), and entirely closed behind.

Mesosternum short, side pieces usually attaining the coxæ, though in several tribes they are cut off by the sterna; in the latter case no trochantin is visible.

Metasternum variable in length, side pieces sometimes wide, sometimes narrow.

Elytra rounded at tip, covering the abdomen, frequently embracing its sides very far.

Abdomen with five ventral segments, of which the first three appear more closely connected than the others, though not decidedly connate.

Legs variable; anterior coxæ globose, rarely oval, not prominent, without trochantin; middle coxæ rounded, with or without trochantin; hind coxæ transverse, more or less separated; tarsi without membranous lobes; anterior and middle ones 5-jointed; hind tarsi 4-jointed, the first joint almost always longer than the second; claws simple.

This family contains a large number of genera, possessing in common very few characters, yet linked together by such gradual changes in structure that their classification presents almost insuperable difficulties. The division into tribes can scarcely be exhibited in a tabular form, on account of the varied relations exhibited by the members of some of the tribes.

The species live upon vegetable matter in various conditions; the habits of those contained in the respective tribes will be mentioned below.

The limits of the family are very well defined, although by Lacordaire certain genera have been retained, which we have found it necessary to exclude; these are Boros, Cononotus, and Penthe, in all of which the anterior coxal cavities are open behind.

The distribution of the genera of this family is very remarkable. Of those without wings scarcely any are common to the two continents. With the exception of three, they are not represented in North America, east of the longitude of the mouth of the Platte or Nebraska River; from that point they increase in number of genera, species, and individuals, until, in California, they form the characteristic feature of the Coleopterous fauna.

The representation of genera on this continent being thus imperfect, the characters given in the short synoptic tables will not always enable our genera to be distinguished from those of other countries. The student, for such purpose, must consult Lacordaire's Genera des Coléoptères, vol. 5, a work not less admirable for the wonderful industry displayed in it, than for being the first successful effort towards a rational classification of this most difficult family.

This family may be properly divided into three sub-families:*—

Ventral segments entirely corneous;
  Middle coxæ without trochantin. . TENTYRIINÆ.
  Middle coxæ with distinct trochantin. . ASIDINÆ.
Ventral segments 3 and 4 with the hind margin coriaceous. TENEBRIONINÆ.

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* One described species, *Pedinus suturalis* Say, Journ. Acad. Nat. Sci. Phila., iii. 263, has not been identified in recent times.

Sub-Family I.—TENTYRIINÆ.

The species of this sub-family are distinguished by the middle coxæ being entirely inclosed by the sterna, without any trochantin; the side pieces of the mesothorax consequently do not extend to the coxal cavities; the ventral segments are entirely corneous, the 3d and 4th having no vestige of a posterior coriaceous margin. Besides these two distinguishing characters, common to all the tribes, there are others worthy of notice, which belong to individual tribes, and are not found to recur in the other two sub-families.

The species, with the exception of Epitragini and a few Thinobatini, are apterous, and the metasternum is very short, except in the winged species. In Zopherini the eyes are very finely granulated, a singular exception in this family. The mentum is frequently very large, so as to fill entirely the gular cavity, and to cover completely the maxillæ and ligula, so that the gular process usually supporting it ceases to exist. This character recurs again only in certain Asidini of the next sub-family. The tarsi are sometimes spinous, sometimes pubescent beneath. The front is frequently trilobed.

The tribes represented in our fauna are as follows:—

- Mentum large, concealing both maxillæ and ligula;
  - Episterna of metathorax very wide; front trilobed;
    - Middle lobe of front truncate; mandibles concealed. I. Craniotini.
    - Middle lobe long; clasped by the mandibles. II. Epiphysini.
  - Episterna of metathorax narrow;
    - Front uni- or trilobed;
      - Body apterous, metasternum short. III. Gnathosiini.
      - Body winged, metasternum long;
        - Anterior tibiæ slender, with two spurs. V. Epitragini.
        - Anterior tibiæ with outer angle prolonged, one spur. VI. Cnemodini.
    - Front broadly rounded. IV. Thinobatini.
- Mentum large, concealing either maxillæ or ligula, never both.
  - Tibial spurs distinct. VII. Batuliini.
  - Tibial spurs very minute;
    - Anterior coxæ widely separated;
      - Eyes transverse, finely granulated. VIII. Zopherini.
      - Eyes round, coarsely granulated. IX. Usechini.
    - Anterior coxæ narrowly separated, antennæ 11-jointed. XI. Stenosiini.
    - Anterior coxæ contiguous, antennæ 10-jointed. X. Dacoderini.

Tribe I.—**CRANIOTINI.**

Body oblong, convex, apterous; front trilobed, labrum prominent, covering the mandibles; mentum large, entirely closing the gular cavity; thorax narrower than the elytra, without trace of lateral margin; elytra oval, embracing rather widely the abdomen, connate, epipleuræ not distinct; anterior coxæ rather widely separated, the prosternum concave between them and not reaching the mesosternum; posterior coxæ oval, distant. Tarsi spinulose beneath. The antennæ are apparently ten-jointed, the terminal joint being small and scarcely distinct from the tenth.

This tribe contains but one species, *Craniotus pubescens* Lec., found in the desert regions of California and Arizona. The sexes differ in the form of the terminal joint of the maxillary palpi, which is very broadly triangular in the male, and narrow in the female.

Tribe II.—**EPIPHYSINI.**

Body short, convex, apterous; front trilobed, labrum prominent; mentum very large, entirely filling the gular cavity; ligula and maxillæ concealed; thorax very short, anterior angles acute, prominent; elytra globose, sides embracing widely the flanks, epipleuræ narrow; anterior coxæ widely separated, prosternum closely fitting to the mesosternum; hind coxæ transverse, widely separated. Tarsi ciliate beneath. Antennæ eleven-jointed.

This tribe contains but two genera, each characterizing a separate group. Epiphysa, with short tarsi and glabrous body, is found at the Cape of Good Hope. Edrotes, with slender tarsi and sparsely clothed with long hairs, contains two species: one (*E. rotundus*) found on the eastern slope of the Rocky Mountains; the other (*E. ventricosus* Lec.) in the Colorado Valley, California.

Tribe III.—**GNATHOSIINI.**

Body variable in form, apterous; front trilobed in our genera, but with at least a prominent middle lobe, always leaving the base of the mandibles exposed; labrum prominent; mentum very large, entirely filling the gular cavity; ligula and maxillæ concealed; elytra widely embracing the flanks of the abdomen, or not; prosternum not adapted to the mesosternum. Tarsi (except in Triphalus) with rigid hairs beneath.

Our genera may be arranged in the following manner:—

Mandibles usually toothed above, clasping the middle lobe of the epistoma, not concealed, labrum concealed or feebly prominent. Group TRIOROPHI.

Intercoxal process of abdomen broad, feebly narrowed in front, tip subtruncate or rounded;

Tarsi spinous beneath; hind tarsi with joint 1 equal to 3 and 4 together;

Middle lobe of front narrowed at base, and clasped by a tooth-like process from the base of the mandibles. **Triorophus.**

Middle lobe of front triangular, much narrowed in front, mandibles without basal tooth. **Stibia.**

Tarsi with silken hairs beneath; hind tarsi with first and fourth joints equal.

Middle lobe of front narrower anteriorly, mandibles without basal tooth, thorax narrower in front. **Triphalus.**

Intercoxal process of abdomen triangular, acute or oval at tip; tarsi spinous beneath;

Middle lobe of front narrowed anteriorly, either oval or truncate. **Trimytis.**

Mandibles not toothed above, not clasping the middle lobe of front which is broad and emarginate, and conceals the mandibles in repose; labrum prominent. Group AUCHMOBII.

Intercoxal process oval at tip; tarsi spinous beneath. **Auchmobius.**

These genera are represented by a few species, at most, in each, which occur west of the region of northern Texas and Nebraska. Trimytis is closely related to Trientoma, but differs in having the eyes partially divided by the sides of the front. The other genera have no very close foreign allies. Auchmobius leads naturally to the following tribe.

Tribe IV.—THINOBATINI.

Body oval or rounded, sometimes winged; epistoma truncate, or feebly rounded; labrum prominent, or not; mentum very large, entirely filling the gular cavity; ligula and maxillæ concealed; elytra not widely embracing the flanks of the abdomen; prosternum not adapted to the mesosternum; metasternum sometimes elongated; middle coxæ without trochantin, inclosed by the sterna; hind coxæ approximate, intercoxal process of the abdomen acute. Tarsi ciliate beneath.

Our genera may be thus tabulated:—

Anterior tibiæ with the outer angle prolonged. **Eurymetopon.**

Anterior tibiæ truncate at tip. **Emmenastus.**

In some individuals, both of Eurymetopon and Emmenastus, the labrum is retracted and almost concealed under the epistoma. In both genera are species with and without wings; in the former case the metasternum is longer than the first ventral segment.

All the species of this tribe are Californian, except a few Emmenastus from Nebraska, New Mexico, and Texas. The winged species are found under bark of *Prosopis*, the others under stones. *Cryptadius* Lec. is not distinct from Eurymetopon.

Tribe V.—EPITRAGINI.

Body oval, winged; epistoma trilobed (in our species); labrum prominent; mentum very large, entirely filling the gular cavity; ligula and maxillæ concealed; elytra with narrow epipleuræ; prosternum often prolonged and pointed, fitting into the deeply emarginate mesosternum; metasternum long, with narrow side pieces; middle coxæ without trochantin, inclosed by the sterna; hind coxæ approximate, intercoxal process of the abdomen acute; tarsi usually pubescent beneath.

Prosternum prolonged, received by mesosternum. **Epitragus.**
Prosternum not prolonged;
  Tarsi pubescent beneath; head without superciliary ridges. **Schœnicus.**
  Tarsi spinous beneath; head with superciliary ridges. **Chilometopon.**

The characters here given do not apply to the tribe as received by Lacordaire, which might probably with advantage be divided.

Tribe VI.—CNEMODINI.

Body oblong, winged; front with prominent middle lobe concealing the labrum, the lateral lobes slightly dilated over the insertion of the antennæ, these slender, eleven-jointed, the terminal joint oval acuminate; mentum large, completely closing the gular cavity; prothorax transversely oval, not distinctly margined, prosternum not prolonged; mesosternum narrowly separating the middle coxal cavities which are entirely inclosed externally; metasternum moderately long, the posterior coxæ transverse and separated by a triangular process of the first ventral segment; epipleuræ narrow, entire. Tarsi slender, and with a double row of short spinules beneath. Anterior tibiæ with a tooth at middle of the outer edge, the apical angle prolonged and with one terminal spur.

This tribe contains but one species, *Cnemodus testaceus* Horn, found near Fort Yuma, California. The unique example before us has not permitted as thorough a study as is desirable, and it may be possible that it should not remain in the present family, notwithstanding its heteromerous tarsi and large mentum.

Tribe VII.—**BATULIINI.**

Body elongate oval, apterous, sparsely hairy; head received in the thorax as far as the eyes, which are almost divided, small and coarsely granulated; front dilated at the sides over the base of the mandibles, submarginate anteriorly, partly covering the labrum; mentum large, flat; maxillæ exposed, ligula concealed; gular peduncle broad, distinct; palpi not dilated; antennæ 11-jointed, very slightly thickened externally; thorax not applied closely to the trunk; metasternum with narrow episterna; middle coxæ surrounded by the sterna, without trochantin; hind coxæ not widely separated, intercoxal process of abdomen triangular; legs short, tibial spurs distinct, especially the anterior ones, anterior tibiæ strongly dilated and compressed; tarsi short, with small spines beneath.

Two small species of Batulius, from the Colorado Desert, constitute this tribe.

Tribe VIII.—**ZOPHERINI.**

Body elongate, apterous, rough, covered with elevations; epistoma truncate or broadly emarginate; labrum uncovered; mentum large, leaving the base of the maxillæ and sometimes the ligula exposed, inserted upon a very broad, short, gular process; head received by the prothorax as far as the eyes, which are very transverse and very finely granulated; antennæ with the outer two or three joints usually connate, elytra but feebly embracing the flanks, without distinctly defined epipleuræ. Metasternum short, with narrow side pieces; middle coxæ without trochantin, inclosed by the sterna. Anterior and hind coxæ very widely separated; intercoxal process of the abdomen broad, rectangular; tibial spurs very small, or wanting.

Our genera are as follows:—

Tarsi sulcate beneath; ligula concealed;
  Antennæ received in very deep grooves;
    Joints of antennæ 9–11 connate; truncate at tip. **Zopherus.**
    Joints of antennæ 10–11 connate; pointed at tip. **Phlœodes.**

Antennal cavities obsolete behind, antennæ as in Phlœodes. **Noserus.**

Tarsi not sulcate beneath; ligula prominent; antennæ not received in cavities;

Antennæ with eleven free joints. **Phellopsis.**

Zopherus occurs in Texas, New Mexico, and Colorado Desert, and Phlœodes in California; the latter genus is indicated but not named by Lacordaire. The type of Noserus is the Californian *Nosoderma plicatum* Lec.; a second species, *N. emarginatus* Horn, occurs in Texas. To Phellopsis belong *Boletophagus obcordatus* Kirby, from Canada and New England, and *Nosoderma porcatum* Lec., from Oregon, which are probably races of one species.

The genus Nosoderma does not occur in our territory; it differs from Phellopsis by the antennæ having the 10th and 11th joints connate into a rounded mass.

Tribe IX.—USECHINI.

Body oblong, apterous, surface roughly sculptured; front hemihexagonal, clypeus truncate, labrum small, almost entirely concealed, mandibles bidentate at tip; mentum moderate in size, concealing the maxillæ at base and the ligula in part; antennæ ten-jointed, the last three joints slightly broader, the antennal cavities at the side margin of thorax, and visible from above; eyes oval, coarsely granulated; anterior and middle coxæ rather widely separated by the sterna, the middle coxal cavities inclosed by the sterna without trochantin; posterior coxæ small, oval, distant; metasternum short, side pieces narrow; epipleuræ entire. Legs short, tibiæ with minute spurs. Tarsi with silken hairs beneath, not sulcate.

This tribe contains but one small species, *Usechus lacerta* Motsch., found in northern California, under bark. The antennæ are described as ten-jointed, as the eleventh is closely united with the tenth, and is represented only by a pubescent space at the tip of the latter.

Tribe X.—DACODERINI.

Body elongate, not convex, apterous; head constricted behind into a narrow neck; eyes coarsely granulated, oval; mentum large, lunate, filling the gular cavity, and covering the base of the maxillæ, ligula prominent; antennæ 10 jointed, thick, joints rounded, equal; anterior coxæ contiguous, their cavities confluent, though closed behind;* middle coxæ without trochantin, entirely inclosed by the sterna; hind coxæ widely separated, intercoxal process of the abdomen obtuse, first ventral segment elongated; elytra embracing but slightly the flanks of the abdomen, epipleuræ narrow. Legs moderately short, tibial spurs scarcely distinct, tarsi pubescent. Side pieces of metasternum very narrow.

The elytra are shining and coarsely punctured, the thorax elongated, constricted at the middle, with a convex lateral tubercle just in the constriction.

This tribe contains in our fauna but one species, *Dacoderus striaticeps* Lec., a singular insect, of small size, found under bark, at the junction of the Colorado and Gila Rivers; a second species has occured in the island of Santo Domingo (*D. dominicensis* Horn).

Tribe XI.—**STENOSIINI.**

Body slender, apterous; head constricted behind into a neck; labrum covered by the epistoma; mentum large, inserted upon a gular peduncle; maxillæ exposed, ligula slightly prominent; eyes variable in form, coarsely granulated; antennæ 11-jointed; elytra embracing but slightly the flanks of the abdomen; anterior coxæ moderately separated; middle coxæ without trochantin, inclosed by the sterna; hind coxæ moderately distant; legs feeble, tibial spurs obsolete, tarsi ciliate. Side pieces of metasternum narrow.

Of this tribe several species of Aræoschizus are known from our territory; they occur in the desert regions of California and Arizona.

Aræoschizus is distinguished from foreign genera by the 11th joint of the thick antennæ being small and partly received by the 10th; and by the thorax being long and feebly convex.

Sub-Family II.—ASIDINÆ.

In this sub-family the middle coxæ are contained in cavities which are open externally, so as to enable the epimera of the mesosternum to reach the cavities; there is also a distinct trochantin visible in the space thus formed. To these characteristics it may be added that the gular peduncle, for the support of the mentum, is visible, except in a few Asidini; the mesosternum is always very short, and the wings are wanting; the tarsi are always channelled beneath, spinous or setose along the margin, almost never pubescent. The species are all found walking on the ground in desert regions. Our tribes are only the following:—

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* This character is known in no other Tenebrionide.

Labrum scarcely visible;
  Anterior tibiæ broadly dilated. I. Anepsiini.
  Anterior tibiæ slender;
    Tarsi pubescent beneath, spurs minute, genæ prominent. II. Nyctoporini.
    Tarsi setose, spurs large, genæ not prominent. III. Cryptoglossini.
Labrum prominent, in great part visible;
  Intercoxal process of abdomen broad, truncate;
    Mentum large, ligula scarcely visible. IV. Asidini.
    Mentum small, ligula lunate, exposed. V. Branchini.
  Intercoxal process acute, triangular. VI. Coniontini.

Tribe I.—ANEPSIINI.

Body elongate, apterous; head horizontal, front hemihexagonal, clypeus emarginate at middle, labrum small, nearly concealed; eyes oval, almost entirely divided by the sides of the front; antennæ eleven-jointed, slightly broader externally, the last joint a little longer and narrower than the tenth, and truncate at tip; mentum moderate, supported by a very short peduncle, the maxillæ visible at the sides, and the ligula at tip; prosternum of moderate width, not prolonged at tip, distant from the declivous mesosternum; middle coxal cavities open externally, trochantin distinct; metasternum short, side pieces moderate, posterior coxæ transversely oval, separated by a triangular process of the abdomen; first three ventral segments rather long. Elytra narrowly inflexed at base, epipleuræ narrow, but entire. Legs moderate, the tibiæ gradually broader to apex, and distantly spinulose externally, the anterior tibia more triangular and subserrate; tibial spurs distinct. Tarsi short, with short spinules beneath.

This tribe contains, as far as known, but one species, *Anepsius delicatulus* Lec., found in the semidesert regions of California. It is a small (4.3 mm.) insect, piceous, the elytra with rows of fine punctures.

Tribe II.—NYCTOPORINI.

This tribe consists of but a single Californian genus, Nyctoporis, found under bark. The body is elongate and rough, the elytra are sculptured with numerous rows of acute elevations, and frequently costate; the epipleuræ occupy the whole of the inflexed portion of the elytra. The mentum is large, quadrate, and transverse, the gular peduncle is almost wanting, the sides of the head beneath are prolonged so as almost to touch the sides of the mentum, thus covering the maxillæ except at the base, where they are visible; the last joint of the palpi is but slightly dilated; the front is dilated, concealing the labrum. The side pieces of the metasternum are narrow; the 2d and 3d ventral segments are scarcely emarginate. The legs are moderate, the tibial spurs are small, and the tarsi are pubescent.

Tribe III.—CRYPTOGLOSSINI.

Body oblong, with variable sculpture; the epipleuræ occupy only a portion of the inflexed portion of the elytra, which is wider than in the preceding tribe; the mentum is moderately large, oval, and flat, in our genera, and the sides of the head are not prolonged beneath; the gular peduncle is distinct; the last joint of the palpi is slender or slightly dilated; labrum almost entirely concealed by the dilated front. The side pieces of the metasternum are tolerably wide; some of the ventral segments are strongly emarginate behind. Legs long and stout, tibial spurs not small, tarsi spinous beneath.

Our genera belong to the group Centriopteræ, distinguished by the mesosternum being prominent.

Eyes emarginate, reniform;
  Last joint of antennæ truncate, smaller than the tenth. **Cryptoglossa.**
  Last joint of antennæ oval, pointed, nearly as large as the tenth. **Centrioptera.**
Eyes entirely divided by the sides of the front;
  Antennæ as in Centrioptera. **Schizillus.**

Oochila Lec. has been united with Centrioptera, the form of mesosternum and denticulation of the femora not having generic value. The species of this tribe are of moderate size, and occur from Texas and Utah through Arizona to California and Mexico.

Tribe IV.—ASIDINI.

Body ovate, apterous; head scarcely narrowed behind the eyes, which are transverse, reniform, and moderately finely granulated; epistoma very short, not covering the base of the mandibles; labrum prominent; mentum large, either filling entirely the gular cavity or inserted upon a very short and wide peduncle, and thus leaving the base of the maxillæ exposed; in either case a space permits the lateral play of the palpi, the last joint of which is large and securiform; antennæ (11-jointed in our genera) with the 11th joint smaller than the 10th; elytra embracing widely the flanks of the abdomen (except in Microschatia); epipleuræ indistinct, middle coxæ with distinct trochantin, side pieces of mesothorax scarcely reaching the cavities; metasternum very short, with the episterna wide, and epimera not visible; hind coxæ moderately separated; intercoxal process of abdomen obtuse; 4th and 5th ventral segments somewhat prolonged behind at the sides. Legs moderate, tibial spurs distinct; tarsi setose, but not sulcate beneath. Front transversely impressed in all the species known to me.

The shortness of the middle of the front, and the exposed base of the mandibles give a somewhat trilobed anterior outline, thus recalling for the last time, though feebly, the form seen in some of the earlier tribes of the family; the large size of the mentum is another reminiscence of the tribes alluded to, and this affinity is still more strongly indicated in the foreign genus Machla, which, while placed by Lacordaire in the present tribe, is remarkable for having the middle coxæ without trochantin and entirely inclosed by the sterna. In three genera below the intermediate coxal cavities are feebly angulate, and the trochantin barely perceptible. Instances like the one here given show the impossibility of exhibiting even the most important affinities in a linear arrangement of a family constituted, like the present, of a very large number of tribes of equal value.

Our genera are:—

Mentum and mandibles in repose closing completely the buccal opening; the palpi concealed; intermediate trochantin very small.

Elytra narrowly clasping the sides of body. **Microschatia.**

Elytra widely inflexed;

Antennæ slender; prosternum arcuate at tip. **Ologlyptus.**
Antennæ shorter, joints transverse; prosternum prominent at tip. **Astrotus.**
Mentum and mandibles distant, allowing the palpi free motion; intermediate trochantin very distinct. **Asida.**

As above defined, Asida includes those species also, formerly placed in *Pelecyphorus*, *Philolithus*, and *Euschides*. It thus becomes polymorphic not only in external form but also in structure. In some species the mentum fills completely the emargination of the under side of the head, so that all trace of a peduncle is lost; in others, however, there is a distinct separation of the sides of the gula from the base of the mentum, and a short peduncle is produced.

Asida is widely distributed over the entire region west of the Mississippi River; Microschatia extends from New Mexico to the Peninsula of California; Astrotus and Ologlyptus occur in Texas and Colorado.

Tribe V.—BRANCHINI.

Body oval, moderately convex, apterous; head flat, received in the thorax as far as the eyes, which are transverse and moderately coarsely granulated; epistoma emarginate in the middle, feebly trilobed (as in Asida), covering the base of mandibles; frontal suture indistinct; labrum prominent, emarginate; antennæ slender, 11-jointed, outer joints broader; mentum moderate, trapeziform, emarginate in front, inserted upon a gular peduncle which is distinctly fissured at the middle owing to the coalescence of the gular sutures; maxillæ exposed, palpi very slightly dilated; ligula moderately prominent, emarginate. Prothorax bisinuate at base, hind angles slightly prolonged, embracing the humeri; elytra embracing widely the flanks of the abdomen; epipleuræ narrow, suddenly dilated at the base; anterior coxæ subtransverse, middle coxæ with distinct trochantin, side pieces attaining the coxal cavities; metasternum short, episterna wide, epimera distinct; hind coxæ separated, intercoxal process of abdomen truncate; tibial spurs distinct, tarsi setose beneath.

This tribe seems to combine characters belonging to the South American tribes Nycteliini and Praocini. With the former it possesses the medial gular fissure, with the latter the prominent emarginate ligula; the epipleuræ are suddenly dilated at the base in all three.

The species of Branchus somewhat resemble in form Opatrum, and are opaque, coarsely punctured, and slightly pubescent; on the elytra are rows of vague foveæ as in *Eusattus reticulatus*, but more strongly marked. They are known to us from Nicaragua, Island of New Providence (Bahama), and Florida. A species from Honduras differs from the others by its anterior tibiæ being truncate, and constitutes the genus Anectus Horn; in form it resembles a broad Asida rather than Opatrum; the tibiæ of the other species are prolonged at the outer angle, though less so than in Eusattus and allied genera of Coniontini.

Tribe VI.—**CONIONTINI.**

Body oval or globose, apterous; epistoma covering the base of the mandibles; labrum prominent; mentum moderate, emarginate; gular peduncle short or almost obsolete; ligula prominent, emarginate; maxillæ exposed; eyes transverse, small, moderately coarsely granulated; elytra usually with narrow epipleuræ; anterior coxæ subtransverse; middle coxæ with distinct trochantin, side pieces of mesothorax attaining the coxal cavities; metasternum very short, episterna wide, epimera visible; hind coxæ approximate; intercoxal process of abdomen acute; tibial spurs long, tarsi spinous beneath; the first joint of hind tarsi very long.

Anterior tibiæ simple. 1.
Anterior tibiæ with outer apical angle prolonged. 2.
1. Antennæ nearly as long as head and thorax; third joint long. 3.
   Antennæ very short, third joint not longer than second. 4.
3. Anterior tarsi slender, first joint moderately long and simple. **Coniontis.**
   Anterior tarsi stouter, first joint prolonged beneath the second. **Cœlotaxis.**
4. Anterior tarsi short, first joint with long process beneath. **Cœlus.**
2. Antennæ long, tarsi simple as in *Coniontis*. **Eusattus.**

Cœlus contains two species found on the California seashore. Eusattus (including *Discodemus* and *Conipinus*) is distributed from Kansas and Texas westward to Oregon, through both California and Arizona. Cœlotaxis occurs in the Guadalupe Island, west of the peninsula of California, and is included in the present work in order that the North America fauna may be completed, as no collections from this island have reached the authors of the Biologia Centrali-Americana; two species are known.

Sub-Family III.—TENEBRIONINÆ.

In this sub-family the posterior margin of the third and fourth ventral segments is coriaceous; the middle coxæ are usually provided with a distinct trochantin, and their cavities extend outwards to reach the epimera; sometimes (Ulomini) the trochantin is absent, but in these cases it appears rather to be united with the mesosternum, than to be absolutely wanting, as in the first sub-family; the middle coxæ are in no case so closely embraced by the sterna as in the Tentyriidæ. The body is more frequently winged than apterous, and, consequently, the metasternum is more frequently long than short; the mentum is small, or, at most, moderate in size, and does not conceal either ligula or maxillæ; the gular peduncle is always distinct. The anterior coxæ are sometimes oval or subtransverse, a character not seen in the other two sub-families; equally peculiar to this sub-family is the short, coriaceous clypeus seen between the front and labrum in certain tribes. It is here too that the first instances occur of genera with entire mandibles. The tarsi are pubescent beneath, sometimes silky, very rarely spinous or setose.

A large number of the species are found under bark; the first four tribes are, however, found on the ground

Our tribes may be separated as follows:—

Front entirely corneous. 2.
Front with a coriaceous margin or a coriaceous band between it and the labrum. 11.
2. First joint of tarsi moderate or elongate, never very short, tarsi not compressed; genæ not sulcate. 3.
First joint of tarsi short, tarsi compressed; genæ sulcate. XII. Boletophagini.
3. Eyes less prominent than the sides of front, more or less transverse, always emarginate in front. 4.
Eyes more prominent than the sides of front, usually rounded, feebly or not emarginate. XI. Diaperini.
4. Anterior tibiæ alone or none dilated. 5.
Tibiæ all more or less dilated, fossorial. X. Trachyscelini.

5. Penultimate joint of tarsi entire. 6.
Penultimate joint of tarsi bilobed. IX. HETEROTARSINI.
6. Anterior coxæ rounded; middle coxæ with trochantin; antennæ perfoliate, third joint usually longer than the following. 7.
Anterior coxæ subtransverse; middle coxæ without trochantin; third joint of antennæ short, outer joints more or less perfoliate. VIII. ULOMINI.
7. Hind coxæ transverse, never oblique. 8.
Hind coxæ oblique, tarsi spinous. VII. CRYPTICINI.
8. Front feebly dilated at the sides. 9.
Front broadly dilated at the sides. 10.
9. Tarsi spinous or setose beneath;
Elytra widely embracing the body. I. BLAPTINI.
Elytra narrowly embracing the body. II. SCAURINI.
Tarsi with coarse almost spinous hairs beneath. III. AMPHIDORINI.
Tarsi with silken pubescence beneath. IV. TENEBRIONINI.
10. Anterior tarsi ♂ dilated. V. PEDININI.
Anterior tarsi ♂ not dilated. VI. OPATRINI.
11. Sides of front not obliquely elevated. 12.
Sides of front obliquely elevated. 13.
12. Abdomen pedunculate, antennæ slender. XIII. APOCRYPHINI.
Abdomen not pedunculate, outer joints of antennæ broader;
Tarsi slender, head not deflexed. XIV. HELOPINI.
Tarsi with antepenultimate joint sub-bilobed, head vertical. XV. DIGNAMPTINI.
13. Metasternum very short; body apterous. XVI. MERACANTHINI.
Metasternum long; body winged. XVII. STRONGYLIINI.

Tribe I.—**BLAPTINI.**

Body oblong, rarely oval, apterous; head prominent, slightly narrowed behind the eyes; epistoma covering the base of the mandibles at the sides; labrum prominent; mentum small, inserted upon a gular peduncle; maxillæ exposed; ligula partly concealed; maxillary palpi with the last joint securiform, not very large; eyes transverse, reniform, tolerably finely granulated; antennæ 11-jointed; elytra embracing widely the flanks of the abdomen, epipleuræ narrow; middle coxæ with large trochantin, side pieces attaining the coxal cavities; metasternum very short, episterna narrow, epimera quite distinct; hind coxæ widely separated; intercoxal process of abdomen rectangular; third and fourth ventral segments not prolonged behind at the margin. Legs long; anterior femora frequently toothed; tibial spurs distinct; tarsi channelled and setose beneath.

The genera inhabiting our fauna are distinguished as follows:—

Outer joints of antennæ broader;
  Anterior tarsi normal;
    Epipleuræ broader at base, attaining the humeral angle. **Eleodes.**
    Epipleuræ very narrow, not attaining the humeral angle. **Embaphion.**
  Anterior tarsi with the first joint short, prolonged beneath in an angle; elytra costate. **Trogloderus.**
Outer joints of antennæ not broader, 8–10 moniliform, suddenly shorter than the preceding joint. **Blaps.**

The characters used by Lacordaire (Genera V. 141) drawn from the structure of the mentum, fail entirely in our series of Eleodes. While it is distinctly trilobed in some, the mentun gradually loses the lateral lobes, first by inflexion, then by disappearance entirely, so that the form observed in Blaps is reproduced. *Discogenia* and *Promus* have been united with Eleodes. The latter genus is distributed over the entire region west of the Platte River extending as far north as Hudson's Bay, and south to Mexico. Embaphion with few species occurs in Texas, Kansas, and Arizona. One (possibly two) species of Blaps (*B. mortisaga* Linn.) has been introduced, and is found abundantly at Alexandria, Va. Trogloderus with one species (*T. costatus* Lec.) occurs in Nevada; it seems to lead toward the Scaurini. It may be known by its strongly costate elytra, and the two deep irregular foveæ on the thorax.

Tribe II.—SCAURINI.

Body elongate, apterous; head prolonged behind the eyes, which are small, transverse, reniform, and coarsely granulated; front dilated at the sides and anteriorly; labrum covered; mentum small, with small inflexed lateral lobes; ligula prominent; gular peduncle distinct; palpi with the last joint dilated, triangular; antennæ 11-jointed, outer joints broader, rounded, subtransverse. Elytra not embracing widely the flanks of the abdomen; epipleuræ narrow, reaching the tip of the elytra; mesosternum very short, side pieces narrow; epimera distinct. Hind margin of third and fourth ventral segments subcoriaceous; third and fourth ventral sutures deeply impressed, the corresponding segments scarcely emarginate in Eulabis, deeply emarginate in the other genera. Anterior coxæ rounded; middle coxæ with distinct trochantin; hind coxæ oval, very widely separated; legs moderate and simple (Eulabis), or long, variously toothed (Cerenopus); tibial spurs distinct or large; tarsi spinous beneath. Scutellum broad, not penetrating between the elytra.

Three genera constitute this tribe:—

Head short, legs simple. **Eulabis.**

Head long; anterior femora more strongly clavate, the posterior in ♂ toothed;

  Outer apical angle of anterior tibiæ prolonged. **Cerenopus.**

  Outer angle not prolonged. **Argoporis.**

Eulabis occurs in California; Cerenopus extends from Nevada to Cape San Lucas; Argoporis is found from New Mexico to California.

Tribe III.—**AMPHIDORINI.**

Body oblong, rarely slender, clothed with long erect hair, apterous; head not narrowed behind, clypeus truncate, labrum visible; eyes transverse, narrow; antennæ 11-jointed; mentum small, transverse, truncate in front, supported by a short peduncle, ligula visible; palpi with the terminal joint triangular. Metasternum short, side pieces narrow; intercoxal process oval or truncate in front. Epipleuræ moderate in width, not reaching the sutural angle. Legs moderate, tibial spurs small; tarsi rather short, clothed beneath with coarse hairs, sometimes with spines intermixed.

The vestiture of the tarsi seems to indicate the intermediate position of these genera between the Blaptini and Tenebrionini; there is, however, some relationship indicated between Stenotrichus and the Helopini.

Our genera are separated as follows:—

Tibial spurs small, but distinct; intercoxal process broad, truncate; epipleuræ becoming rapidly broader toward the base;

  Posterior tarsi nearly as long as the tibiæ, the first joint as long as the next two. **Amphidora.**

  Posterior tarsi much shorter than the tibiæ, the first joint but little longer than the second. **Cratidus.**

Tibial spurs very minute; intercoxal process triangular, oval at tip; epipleuræ very gradually wider to base;

  Posterior tarsi shorter than the tibiæ, the first joint a little longer than the second. **Stenotrichus.**

These genera occur in California and Arizona. The males of Cratidus have a distinct tooth on the inner side of the posterior tibia near the tip.

The species of these genera are usually found walking on the surface of the ground; but *Amphidora littoralis* lives in colonies under oak bark.

Tribe IV.—**TENEBRIONINI.**

Body moderately elongated, apterous, or winged; head prolonged, but scarcely narrowed behind, not received in the thorax as far as the eyes, which are transverse and emarginate, moderately finely granulated; front dilated on the sides, covering the base of the mandibles; epistoma truncate or slightly emarginate, not separated from the labrum by a clypeus; antennæ 11-jointed, gradually thickened externally; mentum small, partly concealing the ligula, inserted upon a gular peduncle; elytra embracing feebly the flanks of the abdomen; epipleuræ narrow. Anterior coxæ globose; middle coxæ with distinct trochantin; legs long; tibial spurs small; tarsi clothed beneath with silky, golden pubescence, or with ordinary coarse pubescence. Hind margin of third and fourth ventral segments subcoriaceous.

This tribe embraces the Cœlometopides of Lacordaire, with a portion of his Tenebrionides; the vestiture of the tarsi appears to be of more structural importance than the length of the metasternum, by which merely apterous and winged species are distinguished. The affinity pointed out between some of the genera and the tribe Scaurini is very strong, and Polypleurus might be equally well placed in the preceding tribe.

The genera may be divided into two groups:—

Tarsi silky pubescent beneath.	UPES.
Tarsi coarsely pubescent beneath.	TENEBRIONES.

Group I.—**Upes.**

In this group the hind coxæ vary in position; the metasternum in the apterous species is very short, but in the winged ones long; the epipleuræ do not reach the tip of the elytra in most of the genera, and in others they are gradually narrowed, reaching the tip.

The species are found under bark of dead trees. Our genera are as follows:—

	Outer joints of antennæ perfoliate, antennæ shorter than head and thorax.	2.
	Outer joints of antennæ triangular, antennæ slender, longer.	10.
2.	Epipleuræ entire.	3.
	Epipleuræ not attaining the tips of elytra.	5.
3.	Epipleuræ not narrowed to apex.	**Polypleurus.**
	Epipleuræ narrower at apex.	4.
4.	Mentum with small, lateral inflexed lobes.	**Nyctobates.**
	Mentum without lateral lobes.	**Iphthimus.**
5.	Intercoxal process of abdomen broad, truncate.	**Cœlocnemis.**
	Intercoxal process narrow, acute.	6.
6.	Eyes feebly emarginate, broad at middle.	7.
	Eyes deeply emarginate, narrow at middle.	9.
7.	Femora strongly clavate.	**Merinus.**
	Femora slender.	8.
8.	Hind tarsi long.	**Upis.**
	Hind tarsi short.	**Haplandrus.**
9.	Mentum trilobed, middle lobe prominent.	**Centronopus.**
	Mentum flat, rounded in front.	**Cibdelis.**
10.	Epipleuræ attaining the tip of the elytra.	**Glyptotus.**
	Epipleuræ not attaining the tip.	11.
11.	Anterior tarsi of male not dilated.	**Rhinandrus.**
	Anterior tarsi of male feebly dilated.	12.
12.	Anterior margin of front reflexed.	**Scotobates.**
	Anterior margin of front not reflexed.	**Xylopinus.**

Of these genera Cœlocnemis, Cibdelis, and Centronopus are Californian; Iphthimus is represented on both sides of the continent, Rhinandrus in Lower California, the other genera belong to the Atlantic region. Centronopus, of the above table, is *Scotobænus* of the preceding edition of this work, while Scotobates contains those species formerly considered Centronopus. Pachyurgus has been omitted, the species on which it is founded being foreign to our fauna.

Singular sexual characters are observed in the anterior and middle tibiæ of Scotobates, in the anterior tibiæ of Xylopinus, and in the anterior and hind tibiæ of Merinus; in the last named the hind femora are also armed with a small tooth. No very marked sexual differences are seen in Upis, Haplandrus, or Cibdelis, nor in the genera with entire epipleuræ. In Cœlocnemis the hind tibiæ of the male are furnished with a dense brush of hair on the inner face near the tip.

Group II.—**Tenebriones.**

In this group the body is elongate oval, or elongate, and winged; the hind coxæ are moderately distant, the legs are slender, and the tibial spurs are more conspicuous than in the other two groups, the tarsi are clothed beneath with a rigid pubescence; the epipleuræ are variable in length. The mentum is flat and trapezoidal.

Our genera are:—

Antennæ gradually thicker toward the tip, palpi and tarsi short;	
Epipleuræ entire.	**Tenebrio.**
Epipleuræ abbreviated;	
Head subquadrate, similar in the sexes.	**Bius.**
Head transverse, dissimilar in the sexes.	**Adelina.**
Antennæ elongate, slender; palpi long, tarsi slender;	
Mentum emarginate in front.	**Alæphus.**
Mentum truncate in front.	**Eupsophus.**

The last two genera are peculiar to the Pacific region, the others are widely distributed. Adelina contains two species of very depressed form and testaceous color; since the preceding edition they have been placed in *Sitophagus* Muls., which is now known to be a synonym of Ulosonia.

Tribe V.—PEDININI.

Body oval, not very convex; epistoma emarginate, covering the base of the mandibles; labrum prominent; mentum frequently trilobed in front, small or moderate in size; gular peduncle distinct; ligula prominent, entire or slightly sinuate in front; eyes transverse, sometimes divided; elytra embracing feebly the flanks of the abdomen; epipleuræ narrow; anterior coxæ subtransverse; middle coxæ with distinct trochantin, side pieces of mesothorax extending to the coxal cavities; metasternum very short, epimera distinct; hind coxæ distant; intercoxal process of abdomen truncate; tibial spurs small, distinct; anterior, and sometimes the middle tarsi of the male dilated, and spongy beneath; hind tarsi sometimes pubescent, sometimes spinous.

Two groups occur in our fauna:—

Eyes not divided.	PLATYNOTI.
Eyes completely divided.	BLAPSTINI.

Group I.—Platynoti.

This group, distinguished by the epistoma being emarginate, and the eyes not entirely divided, is represented in our fauna by only a few species of Opatrinus from the Atlantic district. Opatrinus is distinguished from foreign genera of the same group by the thorax being sinuate at base, and by the inflexed portion of the elytra being formed entirely of the epipleuræ; the mentum is trilobed in front, and the anterior tibiæ are not dilated.

Group II.—**Blapstini.**

In this group the eyes are completely divided; the epistoma is emarginate, and the inflexed part of the elytra is composed entirely of the epipleuræ; the mentum is not trilobed in front. In Notibius and Conibius the dilatation of the anterior tarsi of the male is very feeble, but in the genus last named the anterior tibiæ of that sex are bent and armed with a tooth, on the inner face, near the base.

- Anterior tibiæ with the outer apical angle obliquely truncate;
  - Intercoxal process of abdomen triangular, acute or oval at tip;
    - Antennæ long, slender. **Meoysmus.**
    - Antennæ stout;
      - Upper portion of eyes large, rounded. **Blapstinus.**
      - Upper portion of eyes small, linear. **Conibius.**
  - Intercoxal process broad, truncate at tip. **Notibius.**
- Anterior tibiæ broad, the apex emarginate, the outer apical angle prolonged. **Ulus.**

Blapstinus contains many species, and is widely distributed; the other genera occur west of the Rocky Mountains.

Tribe VI.—**OPATRINI.**

Body oval, not convex; head received by the thorax as far as the eyes, which are transverse, strongly emarginate, and coarsely granulated; epistoma emarginate, covering the base of the mandibles; labrum prominent; mentum small, inserted upon a distinct gular peduncle; ligula prominent, not deeply emarginate; maxillæ exposed; elytra with not very wide epipleuræ, occupying the whole of the inflexed portion. Anterior coxæ subtransverse or rounded; middle coxæ with distinct trochantin, side pieces attaining the cavities; hind coxæ distant; intercoxal process truncate or acute; legs moderately stout, front tibiæ dilated in our genera; tarsi setose beneath. Metasternum with narrow episterna and distinct epimera. Hind margin of third and fourth ventral segments subcoriaceous.

Tibial spurs long; last joint of palpi oval;
  Intercoxal process triangular, acute; eyes large. **Cnemeplatia.**
  Intercoxal process broad, rounded; eyes wanting. **Alaudes.**
Tibial spurs small; last joint of palpi securiform;
  Anterior tibiæ slightly dilated, with the outer angle very much prolonged; intercoxal process of abdomen acute. **Ammodonus.**
  Anterior tibiæ very broad, triangular, outer angle slightly prolonged; intercoxal process truncate. **Ephalus.**

Tribe VII.—**CRYPTICINI.**

Body oval, winged; head received in the thorax as far as the eyes, which are transverse, reniform, small, and moderately granulated; front moderately dilated at the sides, over the base of the mandibles, truncate anteriorly, with a very short coriaceous clypeus visible; antennæ tolerably long, slender, outer joints rounded, very slightly thicker; mentum small; gular peduncle distinct; ligula prominent; palpi with the last joint slightly dilated. Elytra with moderate epipleuræ occupying the whole of the inflexed portion. Prosternum prolonged behind; mesosternum concave; metasternum moderately long, with narrow side pieces. Anterior coxæ almost rounded; middle coxæ with distinct trochantin, the epimera exceedingly short; hind coxæ not widely separated; tibiæ not dilated; spurs distinct; tarsi with small spines beneath; first joint of hind tarsi very long.

This tribe is represented in our fauna by *Crypticus obsoletus* Say, found in the Atlantic district.

This and allied foreign genera are placed by Lacordaire as a group of Coniontini, with the remark that it should constitute more properly a distinct tribe. It differs very much from Coniontini, as will be seen by the characters given above, and still more by the hind margin of the third and fourth ventral segments, being very distinctly coriaceous.

Tribe VIII.—**ULOMINI.**

Body oval or elongate, winged; head slightly but suddenly narrowed behind, received in the thorax up to the eyes, which (in our genera) are transverse, emarginate, and coarsely granulated; the front is dilated so as to cover the base of the mandibles, and in part the mouth; the labrum is but slightly prominent; the mentum is small and trapezoidal, not concealing the ligula; gular peduncle distinct; antennæ 11-jointed, more or less thickened externally, perfoliate. Elytra with narrow epipleuræ. Anterior coxæ subtransverse; middle coxæ inclosed by the sterna, without trochantin; hind coxæ slightly separated; intercoxal process of the abdomen triangular; legs moderate; tibiæ sometimes dilated; tibial spurs distinct; tarsi pubescent beneath, the last joint much elongated. The hind margin of the third and fourth ventral segments is subcoriaceous.

The species are found under bark; a few also infest articles of commerce.

Our genera may be thus arranged:—

Antennæ with last two or three joints suddenly broader. 2.
Antennæ gradually broader to tip. 3.
2. Eyes nearly divided;
  Epipleuræ very narrow at tip; club 3-jointed. **Tribolium.**
  Epipleuræ distinct at tip; club 2-jointed. **Dicœdus.**
 Eyes entire; antennal club 3-jointed. **Phthora.**
3. Base of thorax not margined. 4.
 Base of thorax margined. 11.
4. Head of male either tuberculate or horned; last joint of maxillary palpi oval. 5.
 Head of male not tuberculate; last joint of maxillary palpi triangular. 6.
5. Head of male tuberculate;
  Mandibles above broad, no vertical tooth. **Gnathocerus.**
  Mandibles slender, with a vertical tooth. **Echocerus.**
 Head of male with two long horns. **Evoplus.**
6. Epipleuræ entire. 7.
 Epipleuræ abbreviated. 10.
7. Anterior tibiæ slender. 8.
 Anterior tibiæ more or less dilated. 9.
8. Head of male bituberculate; femora mutic. **Ulosonia.**
 Head of male simple; femora toothed. **Merotemnus.**
9. Prosternum prolonged, mesosternum deeply emarginate. **Mycotrogus.**
 Prosternum not prolonged, mesosternum slightly concave;
  Front tibiæ not denticulate; last joint of antennæ truncate. **Aphanotus.**
  Front tibiæ finely denticulate; last joint oval. **Alphitobius.**
10. Anterior tibiæ slender;
  First joint of hind tarsi long. **Cynæus.**
  First joint of hind tarsi short. **Metaclisa.**
 Anterior tibiæ broad, serrate. **Uloma.**
11. Anterior tibiæ, slightly dilated, finely denticulate. **Eutochia.**

Of the above genera, Phthora, Merotemnus, Mycotrogus, Aphanotus, Metaclisa, and Cynæus are found in the Pacific region, the others in the Atlantic region. This tribe through Evoplus and Ulosonia approaches the Diaperini.

Tribe IX.—**HETEROTARSINI.**

This tribe contains a few winged species of small size, and ovate form; they are remarkable for the coarseness of the punctures, and are sparsely clothed with erect hair.

The head is not received in the thorax as far as the eyes, which are large and coarsely granulated; the front is slightly dilated over the base of the mandibles; the labrum articulates with the epistoma without any intervening clypeus; the antennæ 11-jointed, slightly thickened externally; the mentum is small; the epipleuræ are narrow and extend to the tip of the elytra. The anterior coxæ are globose, the middle ones have a distinct trochantin, the hind coxæ are slightly separated, and the intercoxal process of the abdomen is triangular; the legs are moderate; tibial spurs small; tarsi clothed beneath with long pubescence, the penultimate joint somewhat lobed. The hind margin of the third and fourth ventral segments is subcoriaceous.

Our genera are three:—

Antennæ gradually thicker externally; body pubescent.	**Anædus.**
Antennæ with the last three joints larger;	
Margin of thorax denticulate; body pubescent.	**Paratenetus.**
Margin of thorax simple; body glabrous.	**Pratæus.**

Two species of Anædus are known in our fauna; one from the Atlantic States, the other from the Gila Valley. Paratenetus occurs in the Atlantic States; it was placed by Spinola in Cleridæ, and is omitted by Lacordaire; Erichson referred it to the present family. Pratæus occurs in the Atlantic region.

Tribe X.—**TRACHYSCELINI.**

Body oval or rounded, usually winged; head received in the thorax as far as the eyes; front somewhat dilated at the sides, covering the base of the mandibles; epistoma truncate, separated from the prominent labrum by a short, coriaceous clypeus; eyes transverse, scarcely emarginate, coarsely granulated; antennæ slightly thickened externally; mentum small, inserted upon a gular peduncle; ligula and maxillæ exposed; palpi not dilated;

gular sutures diverging; elytra with narrow epipleuræ. Anterior coxæ transverse; middle coxæ with distinct trochantin; hind coxæ not widely separated; intercoxal process triangular, subtruncate; legs stout; anterior tibiæ dilated; tibial spurs distinct; tarsi setose beneath.

Our genera are as follows:—

Antennæ moderately long, gradually broader externally;
  Epistoma rounded or truncate, slightly dilated at the sides. **Phaleria.**
Antennæ short, the outer four joints rather abruptly dilated;
  Epistoma deeply emarginate. **Anæmia.**
  Epistoma truncate. **Trachyscelis.**

These genera indicate two well-defined groups in the tribe as shown by the structure of the antennæ. Phaleria occurs on the seashore of the Atlantic and Pacific coasts; Trachyscelis on the Atlantic coast, while Anæmia occurs in Owen's Valley, Cal., at a great distance from any seashore.

Tribe XI.—DIAPERINI.

Body oval or rounded, winged; head received in the thorax as far as the eyes, which are transverse and coarsely granulated; front somewhat dilated at the sides, covering the base of the mandibles; epistoma truncate, separated from the labrum by a short coriaceous clypeus; antennæ more or less thickened externally, perfoliate; mentum small; gular peduncle distinct; elytra with narrow epipleuræ. Anterior coxæ transverse; middle coxæ with distinct trochantin; legs slender; tibial spurs small; tarsi pubescent beneath.

Our genera indicate three groups:—

Body broadly oval; eyes emarginate in front; pygidium covered. I. Diaperes.
  First joint of hind tarsi not longer than second. **Diaperis.**
  First joint as long as second and third. **Hoplocephala.**
  First joint longer than second and third;
    Epipleuræ entire; intercoxal process acute;
      Mesosternum concave;
        Last joint of maxillary palpi broadly triangular. **Platydema.**
        Last joint of maxillary palpi elongate triangular. **Phylethus.**
      Mesosternum prolonged in front. **Liodema.**
    Epipleuræ short; intercoxal process truncate. **Scaphidema.**
Body cylindrical; eyes emarginate; pygidium exposed. II. Hypophlœi.
  One genus **Hypophlœus.**
Body elongate oval; eyes not emarginate; pygidium covered. III. Pentaphylli.
  Last five joints of antennæ forming a loose club. **Pentaphyllus.**

Tribe XII.—**BOLETOPHAGINI.**

In this tribe the body is oblong and winged, opaque, with the surface rough, or at least with the elytra costate; head received in the thorax as far as the eyes; front variable; epistoma much dilated, separated from the labrum by a short clypeus; eyes coarsely granulated, deeply emarginate; mentum inserted upon a gular peduncle; ligula prominent; palpi not much dilated; head under the eyes with a large groove for the reception of the base of the antennæ; elytra with narrow epipleuræ. Anterior coxæ transverse; middle coxæ with a small distinct trochantin; hind coxæ separated; intercoxal process triangular; legs moderate; tibial spurs small, tarsi pubescent beneath; the first joints very short, equal; the last joint longer than the others united.

The species live on fungi, which grow upon trees or under their bark. Our genera are two,* both having the sides of the thorax broadly flattened.

Antennæ 10-jointed; eyes not entirely divided.	**Boletotherus.**
Antennæ 11-jointed; eyes completely divided.	**Boletophagus.**

Phellidius Lec. is Boletotherus *Cand.* No species of this tribe is yet known from the Pacific district.

Tribe XIII.—**APOCRYPHINI.**

Body slender, apterous; head not constricted behind; labrum prominent; eyes small, emarginate, coarsely granulated; mentum small, inserted on a gular peduncle; maxillæ and ligula exposed; last joint of palpi strongly securiform; antennæ 11-jointed, slender, scarcely thicker externally; prothorax globose, sides not margined; trunk pedunculated; elytra embracing rather widely the flanks of the abdomen, epipleuræ narrow; posterior margins of third and fourth ventral segments distinctly coriaceous. Anterior coxæ moderately separated; middle coxæ inclosed by the sterna without distinct trochantin; posterior coxæ small, widely separated; legs long, thighs clavate; tibiæ slender, with very small spurs; tarsi pubescent with long hairs.

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* A species of Eledona (*fungicola* Horn) has been described in our fauna, but we are inclined to believe that the specimens were accidentally introduced, and that the species is *E. agaricicola* of Europe.

This tribe consists of a single genus, Apocrypha, of which three small species from California are known; they resemble certain Dyschirius of the Carabidæ; the thorax is globose and densely punctured; the elytra are sparsely punctured and with a few long, erect hairs; they are found on the ground and are rare.

Tribe XIV.—**HELOPINI.**

Body generally oblong, sometimes oval, apterous or winged; head received in the thorax nearly as far as the eyes, which are transverse, emarginate, and coarsely granulated; front dilated at the sides, covering the base of the mandibles, truncate anteriorly, separated from the prominent labrum by a short coriaceous clypeus; antennæ gradually thickened externally; mentum small, trapezoidal, anterior portion coriaceous; ligula prominent. Flanks of prothorax separated by a margin from the back. Elytra with narrow or moderate epipleuræ. Anterior coxæ rounded; middle coxæ with distinct trochantin; hind coxæ narrowly separated; intercoxal process triangular; legs tolerably long; tibial spurs small; tarsi pubescent beneath; the anterior and middle ones of the male usually dilated.

Our species are numerous, and some are found in each district. They are often of a dark, metallic color, with much lustre; all are to be referred to the genus Helops, and in several of them the flanks of the prothorax are sculptured with deep lines.

Tribe XV.—**DIGNAMPTINI.**

Body elongate, winged; head deflexed, nearly vertical in repose; eyes oval, prominent, entire, coarsely granulated; clypeus truncate, with a distinct coriaceous border, the sides of front not reflexed; antennæ 11-jointed, slender, gradually thicker externally, the terminal joint oval, a little larger than the tenth; mentum small, transversely cordiform, narrower at base, supported by a narrow peduncle, apex truncate, and with a coriaceous border between it and the ligula, the latter prominent; terminal joints of palpi broadly triangular. Prothorax margined at the sides, the apex slightly prolonged; anterior coxæ moderately separated by the prosternum, which is not prolonged at tip; mesosternum oblique, the middle coxæ separated and with a distinct trochantin; metasternum long, side pieces narrow; intercoxal process of abdomen triangular. Legs moderately long, tibiæ slender, without spurs. Anterior and middle tarsi with the first three joints broader, ciliate beneath and at sides, nearly equal in length, the third joint emarginate and excavated above, fourth joint small, terminal joint as long as the first three, and with distinct bisetose onychium; claws large, stout; posterior tarsi with first joint slightly elongate, second emarginate and excavated, third small, fourth nearly as long as the others together. Epipleuræ distinct, not entire.

This tribe contains but one described genus, with two species in our fauna. They are small, brownish, glabrous insects, the thorax narrower at base than the elytra, the latter with rows of punctures. The males have a small tooth on the inner side of the tibiæ near the tip. Both species occur in Florida. Others are known in Mexico.

The very distinct coriaceous margin of the clypeus, and a similar structure of the mentum indicate the necessity of placing this tribe near the Helopine series. By the structure of the tarsi a tendency is shown to revert to the Heterotarsini, in which, however, the penultimate joint is the bilobed one.

Tribe XVI.—MERACANTHINI.

Body ovate, convex, apterous; head received in the thorax nearly to the eyes, which are transverse, large, emarginate, and somewhat coarsely granulated; mouth somewhat quadrangularly prolonged; front separated from the labrum by a coriaceous clypeus; sides dilated over the insertion of the antennæ, and obliquely elevated, elevation not extending to the anterior margin of the front (as it does in all the preceding tribes); mentum trapezoidal; ligula prominent; last joint of palpi strongly securiform; antennæ long and slender, outer joints very slightly thicker; epipleuræ narrow, not extending to the tip of the elytra; metasternum short; anterior coxæ rounded; middle coxæ with distinct trochantin; hind coxæ widely separated; anterior thighs armed with an obtuse tooth, less prominent in the female; tibial spurs small; tarsi pubescent beneath.

This and the next tribe differ from all the others represented in our fauna by a peculiarity first pointed out by Lacordaire, and which led him to name the division of the family, to which they appertain, *Otidogènes*. In all the tribes above described the sides of the front, above the insertion of the antennæ, are horizontal, and the lateral margin extends to the anterior margin; in this and the next tribe the lateral margin is elevated into an oblique ridge, which becomes obsolete before attaining the anterior margin of the front.

The present tribe has but one representative in the Atlantic district, *Meracantha contracta*, found under bark; it has received many names, but the oldest is that of *Helops contractus* Beauv.

Tribe XVII.—**STRONGYLIINI.**

Body elongate, winged; head not received in the thorax as far as the eyes, which are large, transverse, emarginate, and somewhat coarsely granulated; mouth broadly but slightly prolonged; front separated from the labrum by a coriaceous clypeus; sides dilated over the insertion of the antennæ, and obliquely elevated, elevation not extending to the anterior margin of the front; mentum trapezoidal; ligula prominent; last joint of palpi strongly securiform; antennæ long and slender, outer joints very slightly thicker. Epipleuræ narrow, extending to the tip of the elytra; metasternum long; anterior coxæ rounded; middle coxæ with distinct trochantin; hind coxæ narrowly separated; legs long; tibial spurs very small; tarsi pubescent beneath.

But one genus, Strongylium, is represented by five species found under bark in the Atlantic district; two of them differing somewhat in the form of the thorax are described by Say; *S. tenuicolle* Lac. (*Helops ten.* Say) has the thorax subcylindrical, and as long as wide; *S. terminatum* Lac. (*Tenebrio terminatus* Say) has the thorax somewhat narrowed in front, and wider at the base than its length. In both species the last joint of the antennæ is pale yellow.

FAM. LIX.—**AEGIALITIDAE.**

Mentum very transverse, trapezoidal, narrower in front, supported on a very short and broad gular process; ligula broad, prominent; labial palpi widely separated, short, 3-jointed.

Maxillæ ciliate within, bilobed, the inner lobe very short, the outer broad, obtuse at tip, base prominent; palpi short, 4-jointed, scarcely dilated.

Head prominent, not constricted behind, received into the thorax not as far as the eyes, which are small, convex, rounded, and coarsely granulated; clypeus short, distinct; labrum prominent; mandibles short, tip slightly prolonged, acute, inner edge with two small, distant teeth.

Antennæ as long as the head and thorax, 11-jointed, last three joints one-half larger than the preceding ones, inserted under very small oblique frontal ridges.

Prothorax subcylindrical, lateral suture obliterated; coxal cavities entirely closed behind, and widely separated.

Mesosternum moderately long; coxal cavities surrounded by the sterna, side pieces concealed by the humeri of the elytra.

Metasternum very short, side pieces not very wide.

Elytra separate, broadly rounded at tip, covering the abdomen; epipleuræ extremely narrow, wings wanting.

Abdomen with six ventral segments; the first and second connate, the fifth truncate at tip, and closely united with the sixth.

Legs long; anterior coxæ globose, prominent, widely separated, without trochantin; middle ones very widely separated, rounded, without trochantin; hind ones very widely separated, oval; tibiæ slender, with very small spurs; anterior and middle tarsi 5-jointed, hind ones 4-jointed; all the joints short and equal, pubescent beneath, except the last, which is very long and stout, with large, simple claws.

The characters above detailed are abundantly sufficient to separate as a distinct family the single species, *Aegialites debilis* Mann., from Alaska, upon which it is founded.

The insect is of small size, and of black color, with the elytra gradually widened from the thorax, and impressed with punctured striæ, gradually becoming effaced towards the sides.

Regarding the affinities of this genus various opinions have been entertained. Mannerheim hesitated between Scydmænidæ and Tenebrionidæ; Motschulsky, on account of the form of the tarsi, placed it among the Parnidæ; Gerstaecker placed it in Tenebrionidæ near Helops. It is of such extreme rarity as to have been seen by but few entomologists.

FAM. LX.—CISTELIDAE.

Mentum small, trapezoidal, wider in front; ligula exposed; paraglossæ distinct; labial palpi 3-jointed; gular peduncle distinct.

Maxillæ with two flattened, ciliate lobes; palpi 4-jointed, frequently long and much dilated.

Head suddenly but only moderately narrowed behind the eyes; neck thick, received by the prothorax; mouth moderately prolonged; eyes not finely granulated, usually large, transverse, and emarginate; anterior part of front subcoriaceous; clypeus not distinct (except in Stenochidus, where the front is corneous, and the clypeus somewhat distinct); labrum prominent; mandibles short.

Antennæ 11-jointed, long, more or less serrate, sometimes nearly filiform, inserted under small oblique frontal ridges, which do not reach the anterior margin of the front, and are usually almost obsolete.

Prothorax with epimera and episterna not distinct, lateral margin obvious in our genera; anterior coxal cavities closed behind, sometimes confluent.

Mesosternum short, side pieces attaining the coxal cavities.

Metasternum long in our genera; episterna narrow.

Elytra rounded at tip; epipleuræ narrow; wings perfect in our genera.

Abdomen with five or sometimes six ventral segments, of which the first three are more closely connected, though not connate; the hind margin of the third and fourth is coriaceous; intercoxal process acute, broadly triangular in Prostenus.

Legs generally long; anterior coxæ varying from globose and subtransverse to conical; middle coxæ with distinct trochantin; hind coxæ transverse, not widely separated in our genera; tibial spurs distinct; tarsi usually lobed beneath, anterior and middle ones 5-jointed, hind tarsi 4-jointed; claws always distinctly pectinate.

The species of this family approach very nearly in organization to the last tribes, or most degraded forms of Tenebrionidæ; and the degradation of structure is carried still farther by the anterior coxæ becoming conical, prominent, and contiguous in certain genera. The only characters to be relied on for the isolation of this family are—1st, the pectinate claws; 2d, the anterior coxal cavities closed behind.

Some of the species live on leaves and flowers, others are found under bark.

Groups of genera seem to be indicated, but the characters, when illustrated by foreign genera, appear to be very indefinite.

Our genera may be arranged as follows:—

Intercoxal process of abdomen broadly triangular. Group LYSTRONYCHI.

Mandibles not prominent, emarginate at tip. **Prostenus.**

Intercoxal process narrow, acute;

Mandibles emarginate (rarely truncate). 2.

Mandibles acute at tip; 6th ventral segment visible. Group CTENIOPI. 9.

2. Body Upiform; prothorax subquadrate, narrower than the elytra, which are elongate and deeply striate; penultimate joint of tarsi lobed. Group UPINELLÆ.

Mandibles subtruncate; last joint of maxillary palpi very long, outer side nearly twice as long as the basal. **Stenochidus.**

Body oval, prothorax widest at base, basal angles distinct. Group CISTELÆ. 3.

3. Penultimate joint of tarsi lobed. 4.

Tarsi not lobed beneath. 5.

4. Last joint of maxillary palpi with the apical side longest. **Allecula.**

Last joint of maxillary palpi with the apical and outer sides nearly equal. **Hymenorus.**

5. Last joint of maxillary palpi broad triangular. 6.

Last joint of maxillary palpi elongate triangular. **Cistela.**

6. Third antennal joint nearly equal to 4th. 7.

Third antennal joint much shorter than 4th; 6th ventral segment visible. 8.

7. Front tarsi as long as the tibiæ; antennæ slender. **Isomira.**

Front tarsi shorter than the tibiæ; antennæ stout. **Mycetochares.**

8. Antennæ strongly serrate, 2d and 3d joints equal. **Chromatia.**

Antennæ elongated, not serrate, 3d joint longer than 2d. **Capnochroa.**

9. Hind coxæ divided by a transverse groove, the posterior portion larger, flat, with the hind edge acute. 10.

Hind coxæ divided into two nearly equal portions. 11.

10. Front tarsi of ♂ elongated, deformed. **Androchirus.**

11. Antennæ slender; hind angles of prothorax rectangular. **Cteniopus.**

Stenochidus and Prostenus are exclusively Californian; the latter is also represented in South America: Hymenorus, Cistela, and Mycetochares occur on both sides of the continent; the other genera only in the Atlantic region.

FAM. LXI.—OTHNIIDAE.

Mentum trapezoidal, truncate in front; ligula corneous, with distinct paraglossæ; palpi cylindrical, 3-jointed, third joint longer than the others.

Maxillæ exposed at base, bilobed, the lobes broad, obtuse and ciliate at tip, the inner shorter, membranous, the outer semi-corneous; palpi 4-jointed, cylindrical, the last joint larger than the others.

Mandibles short, arcuate, bifid at tip, and bidentate on the inner edge.

Antennæ inserted under the sides of the front, before the eyes, 11-jointed, first joint thicker than the following, third longer than the first and second together, 9–11 broader, forming a loosely articulated club.

Head large and flat, sides of the front oblique in front of the eyes; labrum very short, closely articulated with the front, ciliate anteriorly; mandibles short, emarginate at tip; eyes large, prominent, finely granulated.

Prothorax quadrate, not wider than the head, feebly serrate on the sides, with the angles rounded; side pieces not distinct; coxal cavities small, rounded, confluent, closed behind.

Mesosternum short, narrow; side pieces divided by an almost longitudinal suture.

Metasternum moderate, side pieces narrow.

Elytra elongate, rounded at tip, leaving the tip of the abdomen uncovered; scutellum small, triangular.

Abdomen with five free ventral segments, slightly diminishing in length, the posterior margins semi-membranous.

Coxæ, anterior small, conical, prominent, and contiguous; middle ones rounded, prominent, slightly separated by the mesosternum; hind ones transverse, not prominent, slightly separated, extending to the sides of the body.

Legs slender; tibiæ linear, with minute terminal spurs; tarsi slender, tolerably long, joints diminishing in length, pilose beneath, anterior and middle 5-jointed, hind ones 4-jointed; claws simple.

Formerly placed by us in the Clavicorn series, the discovery of additional material, in which both sexes are represented, seems to indicate the necessity of placing the family in the Heteromerous series. The tarsi in both sexes are truly heteromerous, and the margins of the ventral segments semi-membranous as in the more degraded Tenebrionidæ and the subsequent families. The antennæ have a form of sensitive punctuation similar to that observed in the Helopide series. From all those families in which the anterior coxal cavities are closed behind, the Othniidæ may be known by having all the ventral segments free.

Five species of Othnius occur in our territory: one in Virginia, the others in Colorado, Arizona, and California. Mr. H. K. Morrison states that he found them running actively on the leaves of trees; they are probably predaceous.

Other species occur in Mexico and Borneo. The genus was described in 1860 under the preoccupied name *Elacatis* by Mr. Pascoe.

FAM. LXII.—**LAGRIIDAE.**

Mentum transverse, trapezoidal, wider in front, supported on a distinct gular process; ligula prominent; palpi 3-jointed.

Maxillæ with two flattened, ciliated lobes; palpi 4-jointed, moderate in size.

Head prominent, horizontal, inserted into the thorax, more or less constricted behind the eyes, which are transverse, emarginate, and not finely granulated; clypeus subcoriaceous; labrum prominent; mandibles short.

Antennæ 11-jointed, nearly filiform, inserted under very small oblique frontal ridges.

Prothorax narrower than the base of the elytra, subcylindrical, with the lateral suture obliterated; anterior coxal cavities closed behind, and nearly confluent.

Mesosternum moderately long, side pieces attaining the coxal cavities; metasternum long, side pieces narrow; epimera not visible.

Elytra rounded at tip, covering the abdomen; epipleuræ narrow; wings perfect.

Abdomen with five free ventral segments, the anterior four of which appear to be more closely connected; fifth rounded at tip, sixth sometimes visible.

Legs slender; anterior coxæ conical, prominent, without trochantin, separated by a very narrow prosternum; middle coxæ separated, with distinct trochantin; hind coxæ transverse; tibial spurs obsolete; front and middle tarsi 5-jointed; hind tarsi 4-jointed, with the first joint long; the penultimate joint of all the tarsi (except in one foreign genus) is dilated, emarginate, and clothed beneath with a dense brush of hairs; claws simple.

This family is represented in our fauna by five species from the Atlantic States; they are found under bark and on leaves; they belong to a tribe, Statirini, to be distinguished from the genuine Lagriini by the sixth ventral segment being visible, and the last joint of the antennæ elongated. Two genera are indicated:—

Head scarcely constricted behind (elytra not striate).	**Arthromacra.**
Head strongly constricted behind (elytra striate).	**Statira.**

To Arthromacra belongs only *Lagria ænea* Say (*Arthrom. donacioides* Kirby).

There is absolutely nothing in the preceding formula which can be relied on as distinguishing this family from the Tenebrionidæ, except the prominent anterior coxæ, and the dilated penultimate joint of the tarsi; the larvæ are nevertheless very different, and it is chiefly owing to a knowledge of that fact that the two families are retained as distinct.

FAM. LXIII.—MONOMMIDAE.

Mentum moderate in size, somewhat rounded, supported by a broad gular process; gular fissures narrow; ligula corneous, somewhat prominent behind the mentum; labial palpi 3-jointed.

Maxillæ with two flattened ciliated lobes; palpi 4-jointed, last joint truncate.

Head horizontal, prominent, received in the thorax as far as the eyes, which are large, transverse, and strongly granulated; front flat, rounded anteriorly; labrum short, scarcely prominent; mandibles short, emarginate at tip.

Antennæ inserted under the frontal margin, received in grooves on the under surface of the prothorax, 11-jointed; last three joints larger, forming an oval flattened club.

Prothorax gradually narrowed from base to tip, as wide at base as the elytra; lateral suture distinct; flanks with a deep curved groove from the front to the hind angle for the reception of the antennæ; prosternum broad, rounded behind, fitting closely to the mesosternum; coxal cavities very small, closed behind by the mesosternum.

Mesosternum broad, side pieces not extending to the coxal cavities; metasternum large; side pieces narrow; epimera visible.

Elytra rounded behind, covering the abdomen; epipleuræ not very wide, extending to the apex.

Abdomen with five free segments; the first elongated, the 5th marked with a curved submarginal furrow in our genus.

Legs moderate, strongly contractile; anterior coxæ distant, scarcely visible, rounded; middle coxæ flat, widely separated; hind ones flat, transverse, widely separated; middle thighs suddenly contracted at the base; tibiæ slender, compressed; tarsi not dilated, slightly pubescent beneath; anterior and middle ones 5-jointed, hind ones 4-jointed; claws small, simple; first joint of hind tarsi long.

This family consists of small, black, oval flattened insects, resembling in appearance Triplax of the Erotylidæ. It appears to constitute a very distinct type, without well-marked affinities with any other family. It contains but two genera: Mononıma confined to the Eastern, Hyporhagus to the Western Continent. Of the latter genus one species is found in the Atlantic, and three in the Pacific district.

FAM. LXIV.—**MELANDRYIDAE.**

Mentum transverse, trapezoidal, generally narrower in front, supported on a large gular process; ligula prominent; labial palpi 3-jointed.

Maxillæ with two flattened ciliate lobes; palpi 4-jointed, frequently very long and much dilated.

Head usually deflexed, generally not constricted behind; received into the thorax not as far as the eyes; suddenly constricted behind in Scraptia; eyes emarginate or entire, and not finely granulated; clypeus often subcoriaceous; labrum prominent; mandibles short.

Antennæ 11-jointed in our genera (10-jointed in the foreign genus Conopalpus); generally filiform; sometimes thicker externally, inserted under very small oblique frontal ridges.

Prothorax as wide behind as the base of the elytra (except in Stenotrachelini and Mycterini), with the lateral suture nearly always distinct; anterior coxal cavities open behind, frequently confluent.

Mesosternum moderately long, side pieces attaining the coxal cavities; metasternum long, side pieces narrow; epimera visible.

Elytra rounded at tip, covering the abdomen; epipleuræ narrow; wings perfect.

Abdomen with five free ventral segments, the anterior two sometimes more closely connected; intercoxal process small.

Legs moderate or long, slender; anterior coxæ large and oval when separated, conical and prominent when contiguous, sometimes with trochantin; middle coxæ with distinct trochantin, sometimes nearly contiguous; hind coxæ transverse, contiguous, or nearly so; tibial spurs distinct; front and middle tarsi 5-jointed, hind tarsi 4-jointed; the penultimate joint frequently emarginate; claws simple in the first three tribes, cleft or appendiculate in the others.

This family contains a moderate number of species found under bark, or in fungi. The form is generally elongate, and the thorax is usually marked with two basal impressions; the first joint of the hind tarsi is always much elongated.

Six tribes are separated in the following manner:—

Tarsal claws simple;
  Antennæ with the last four joints suddenly larger. TETRATOMINI.
  Antennæ gradually thickened or filiform;
    Head not constricted behind. MELANDRYINI.
    Head constricted into a small neck. SCRAPTIINI.
Tarsal claws cleft to the base. STENOTRACHELINI.
Tarsal claws broadly appendiculate at base;
  Anterior coxæ with distinct trochantin; middle coxæ open externally. NOTHINI.
  Anterior coxæ without trochantin; middle coxæ inclosed by the sterna. MYCTERINI.

Tribe I.—TETRATOMINI.

This tribe is constituted of but a single genus Tetratoma, of which two species are found in the Atlantic States in fungi; they are oval and convex; the palpi are short, not much dilated; the antennæ are 11-jointed, with the last four joints equal in size, and each is about three times as long as any of the preceding ones; the tibial spurs are small, the penultimate tarsal joint not lobed, and the claws simple; the coxæ are not contiguous but separated by their respective sterna.

Tribe II.—MELANDRYINI.

The outer joints of the antennæ are not suddenly larger, and the claws are simple; according to the position of the coxæ the following groups may be established, in all of which the antennæ are 11-jointed:—

	Front coxal cavities with an outer fissure.	2.
	Front coxal cavities without fissure, trochantin not visible.	5.
2.	Front coxæ separated by prosternum.	3.
	Front coxæ contiguous.	4.
3.	Third antennal joint longer than 4th.	PENTHES.
	Third antennal joint equal to 4th.	SYNCHROÆ.
4.	Frontal suture distinct; trochantin visible.	MELANDRYÆ.
	Frontal suture and trochantin not visible.	SERROPALPI.
5.	Front coxæ contiguous.	DIRCÆÆ.
	Front coxæ separated by prosternum.	ORCHESIÆ.

Group I.—**Penthes.**

We have placed as a separate group the genus Penthe, represented by two velvety black, flattened, oval species, found under bark in the Atlantic States; the more common one, *P. obliquata*, is readily known by the scutellum covered with orange-colored hair.

These insects resemble in appearance gigantic Mycetophagi, and have been classed by previous authors among the Tenebrionidæ; the anterior coxal cavities are widely open behind.

The antennæ are not thickened externally; the 3d joint is as long as the 4th and 5th together; the 7–10 are rounded, the 11th is a little longer, and is pale at the tip; in the male the joints 4–7 are compressed and broader than the others; the maxillary palpi are moderate in length, and but slightly dilated; the anterior coxæ are oval and separated by the prosternum; the middle coxæ are equally distant, and the hind coxæ are less distant; the tarsi are filiform, the penultimate joint not being lobed; the claws are simple; the tibial spurs are short.

Group II.—**Synchroæ.**

This group contains but a single species, *Synchroa punctata* Newman (*Melandrya umbrina* Mels), from the Atlantic States. The form is elongate, like an Elateride of the genus Melanotus, coarsely punctured and pubescent; the head is prominent and horizontal; the maxillary palpi are moderate in length, and but slightly dilated; the antennæ are long, slender, and feebly serrate, and the third joint is not longer than the fourth; the anterior coxæ are oval and separated by the prosternum, which is also slightly prolonged; the middle coxæ are equally separated; the hind coxæ are less distant; the tarsi are filiform, and the claws simple; the tibial spurs are long.

Group III.—**Melandryæ.**

Head inclined, never vertical, frontal suture distinct; antennæ with the third joint not conspicuously elongated; maxillary palpi long, sometimes moderately serriform, last joint wider, securiform; anterior coxæ conical, contiguous, with distinct trochantin; middle coxæ absolutely contiguous; tibial spurs slender, never small; tarsi with penultimate joint more or less lobed; claws simple.

Our genera are four in number:—

Thorax with the base sinuous, but not distinctly lobed;
  Elytra not striate. **Prothalpia.**
  Elytra striate. **Melandrya.**
Thorax with a broad basal lobe; elytra punctured, not at all striate;
  2d and 3d joints of antennæ together not longer than the 4th. **Emmesa.**
  3d joint of antennæ scarcely shorter than the 4th. **Phryganophilus.**

Melandrya is represented by *M. striata* Say, Emmesa by *E. connectens* Newm. (*Melandrya maculata* Lec.), and *E. labiata* (*M. labiata* Say), all from the Atlantic States; *Phryganophilus collaris* Lec. is found from Maine to Oregon.

Group IV.—**Serropalpi.**

Head more or less inclined, sometimes vertical; frontal suture not distinct; antennæ variable, third joint not conspicuously elongated; maxillary palpi variable, sometimes very long, with the third and fourth joints dilated internally, and the fourth large and securiform (in which case they are called *serriform*); anterior coxæ conical, contiguous, without trochantin, except in Xylita, where the trochantin is indistinct; middle coxæ not contiguous, except in Amblyctis and Xylita; tibial spurs slender, sometimes very small; tarsi with penultimate joint sometimes emarginate or lobed; claws simple.

Our genera may be thus tabulated:—

Middle coxæ contiguous. 2.
Middle coxæ separated by mesosternum. 3.
2. Antennæ strongly compressed; 4th joint of maxillary palpi not larger than 3d. **Amblyctis.**
  Antennæ slender; 4th joint of maxillary palpi large, securiform. **Xylita.**

3. Maxillary palpi with 4th joint wider than 2d and 3d. 4.
Maxillary palpi with 4th joint not wider than 2d and 3d. 6.
4. Pubescence prostrate. 5.
Pubescence erect; antennæ slender; last joint of maxillary palpi securiform. **Zilora.**
5. Antennæ thick, outer joints transverse; last joint of maxillary palpi securiform. **Carebara.**
Antennæ slender; last joint of maxillary palpi long, cultriform. **Spilotus.**
Antennæ slender; last joint of maxillary palpi triangular. **Scotochroa.**
6. Maxillary palpi serriform. 7.
Maxillary palpi not serriform, 4th joint elongated. **Enchodes.**
7. Hind tarsi with 3d joint emarginate, shorter than 2d. 8.
Hind tarsi with 3d joint not emarginate, equal to 3d; maxillary palpi very compressed and serriform, last joint elongate, securiform. **Serropalpus.**
8. Last joint of maxillary palpi long, cultriform;
Prothorax elongate, side margin effaced in front, obsolete behind. **Hypulus.**
Prothorax quadrate, side margin effaced in front, distinct behind. **Marolia.**

Group V.—**Dircææ.**

This group agrees with the Orchesiæ in having the front coxal cavities entirely closed on the outer side, and without fissure, but differs by the contiguous front coxæ, which are not separated by the prosternum. The head is vertical, and the prosternum short in Dircæa, but not in the other two genera; the penultimate tarsal joint is more or less lobed beneath.

Maxillary palpi with last joint securiform. 2.
Maxillary palpi with last joint cultriform. **Dircæa.**
2. Spurs of middle tibiæ small, equal. **Symphora.**
Spurs of middle tibiæ very unequal. **Anisoxya.**

No species is known to us from the Pacific region.

Group VI.—**Orchesiæ.**

Head vertically deflexed; antennæ gradually thickened externally, 11-jointed, third joint not conspicuously elongated; maxillary palpi with the last joint more or less dilated; anterior coxæ oval, separated by the prosternum; middle coxæ separated; hind coxæ contiguous, flat, variable in form, oblique in Hallomenus, not oblique in the other genera; spurs of middle and hind tibiæ variable in size, but very large and serrate in Orchesia; tarsi filiform; claws simple.

The following genera occur in our fauna:—

Spurs of hind tibiæ large, the inner one very long, serrate. 2.
Spurs of hind tibiæ small; hind coxæ not oblique. **Eustrophus.**
Spurs of hind tibiæ moderate; hind coxæ oblique. **Hallomenus.**
2. Second antennal joint moderate. **Orchesia.**
  Second antennal joint thick; antennæ strongly clavate. **Microscapha.**

The first two genera are represented on both sides of the continent; the other two only in the Atlantic region.

Tribe III.—SCRAPTIINI.

Head inclined; suddenly constricted a short distance behind the eyes into a small neck; maxillary and labial palpi with the last joint securiform; anterior coxæ large, conical, contiguous, with distinct trochantin; middle coxæ absolutely contiguous; tibial spurs slender; tarsi with the penultimate joint lobed; claws simple.

Our genera are three:—

Last joint of maxillary palpi triangular;
  Penultimate joint of all the tarsi lobed. **Scraptia.**
  Penultimate joint of hind tarsi not lobed. **Allopoda.**
Last joint of maxillary palpi elongate, cultriform. **Canifa.**

No species has been described from the Pacific region, although one is known to us.

Tribe IV.—STENOTRACHELINI.

Head horizontal or deflexed; antennæ nearly filiform; maxillary palpi with the last joint large, securiform; anterior coxæ conical, contiguous, with distinct trochantin; middle coxæ absolutely contiguous, tibial spurs slender; tarsi filiform; claws cleft to the base, with the inferior portion as long as, but more slender than the upper.

Two genera form this tribe:—

Head horizontal, distinctly narrowed at a distance behind the eyes forming a neck; first joint of intermediate tarsi longer than the fifth. **Stenotrachelus.**
Head deflexed, not narrowed behind; first joint of intermediate tarsi equal to the fifth. **Scotodes.**

Stenotrachelus arctatus (Say) and *Scotodes americanus* Horn are the only representatives of this tribe in our fauna; the former extends from Canada to Alaska, the latter occurs in the White Mountains.

This tribe is remarkable for presenting the first instance of the cleft form of claws, which reappears subsequently in the Anthicidæ in the genus Nematonyx, and becomes very general in the families Mordellidæ and Meloidæ; it is very doubtful whether these two genera should not be separated as a distinct family and placed just before Anthicidæ.

Tribe V.—**NOTHINI.**

Head deflexed; antennæ slender or feebly subserrate; maxillary palpi with the last joint large, dilated, nearly cultriform; anterior coxæ conical, contiguous, trochantin distinct; middle coxæ closely approximated, the cavities open externally with distinct trochantin; tibial spurs small but distinct; tarsi with the penultimate joint prolonged in an emarginate lobe beneath the last joint; claws with a broad, rectangular dilatation at base, the apical portion cleft in the male.

This tribe contains in our fauna but one genus, Nothus, represented by one species on each side of the continent. They resemble Telephori in appearance, and are found on flowers. In the males the posterior femora are curved, and the tibiæ armed with an acute process on the inner edge near the tip.

Tribe VI.—**MYCTERINI.**

Head horizontal or slightly inclined, slightly narrower behind the eyes; antennæ slender, subserrate beyond the third joint; eyes oval, subtruncate in front; prothorax narrower than the elytra, the lateral margin indistinct; anterior coxæ small, conical, contiguous, without trochantin; middle coxæ small, rounded, inclosed by the sterna without visible trochantin; posterior coxæ transverse, separated by an acute intercoxal process; legs slender, tibiæ with small spurs; tarsi slender, the penultimate joint prolonged in a membranous lobe; claws armed with a broad basal dilatation.

The genera constituting this tribe form two natural groups, as follows:—

Head short; epipleuræ not reaching the tips of the elytra; first ventral segment short. Group LACCONOTI.

Head prolonged into a beak; epipleuræ reaching the tips of the elytra; first ventral segment as long as the second. Group MYCTERI.

These groups are represented by one genus in each, Lacconotus and Mycterus; the former with two species, one eastern, the other from Colorado and Nevada; the latter with four, three of which occur from New Mexico to Oregon. They were formerly considered a family by themselves, but recent studies indicate that they bear the same relationship to the other Melandryidæ that the Salpingini do to the Pythidæ.

The males of Mycterus have the antennæ more serrate, and the first ventral segment at middle elevated in a flat tubercle which may be smooth, strigose, or pubescent. A similar character to the last occurs in Lacconotus, but the tubercle or pubescent space is on the second ventral segment.

FAM. LXV.—**PYTHIDAE.**

Mentum transverse, trapezoidal, narrower in front, supported on a broad and short gular process; ligula visible; labial palpi 3-jointed.

Maxillæ with flattened, ciliate lobes; palpi 4-jointed, moderate in size.

Head not constricted behind, prominent in our tribes, received by the prothorax not as far as the eyes, which are not emarginate, and not finely granulated; clypeus short, distinct; labrum prominent; mandibles short, emarginate at tip, sometimes toothed internally.

Antennæ 11-jointed, slightly thickened externally, inserted under small oblique frontal ridges.

Prothorax narrower at base, with the lateral suture distinct in Boros and Crymodes, wanting in the other genera; anterior coxal cavities open behind, frequently confluent.

Mesosternum moderately long, side pieces attaining or not the coxal cavities; metasternum long (except in Cononotus), side pieces narrow.

Elytra rounded at tip, covering the abdomen; epipleuræ narrow, wings perfect (except in Cononotus).

Abdomen with five ventral segments, all free; intercoxal process small, acute (except in Cononotus).

Legs moderate; anterior coxæ conical, usually contiguous, sometimes with trochantin; middle coxæ rounded, with or without trochantin; hind coxæ transverse, nearly contiguous, except in Cononotus, where they are very widely separated; tibiæ slender, with the spurs small but distinct; tarsi slender, never lobed, anterior and middle ones 5-jointed, hind ones 4-jointed; claws simple.

This family contains a small number of species, mostly confined to northern localities; those of the first and third tribes live under bark, those of the second are found under stones.

Our three tribes (or perhaps more properly sub-families) may be separated as follows:—

Middle coxæ with distinct trochantin. PYTHINI.
Middle coxæ inclosed by the sterna, without trochantin;
  Metasternum short, head not rostrated. CONONOTINI.
  Metasternum long, head with a distinct rostrum. SALPINGINI.

Tribe I.—**PYTHINI.**

Head prominent; last joint of maxillary palpi dilated; metasternum long, body winged; intercoxal process of abdomen small, acute; middle coxæ with distinct trochantin, extending to the epimera; mandibles visible beyond the labrum, emarginate at tip, and in Priognathus also serrate on the inner edge.

These species are of moderate or large size, and are found under bark; in general aspect they resemble certain Tenebrionidæ, but are immediately known by the anterior coxal cavities being open behind.

Three of our genera, Sphalma, Crymodes, and Priognathus, are peculiar to the northern part of America; the other two are also represented in Northern Europe; they are distinguished as follows:—

Thorax distinctly margined at the sides, quadrate; mandibles not prominent. **Sphalma.**
Thorax not margined, more or less oval; mandibles exserted;
  Lateral sutures of thorax distinct; third joint of antennæ not longer than the fourth;
    Head not narrowed behind the eyes; tibial spurs well developed. **Crymodes.**
    Head distinctly narrowed behind the eyes; tibial spurs small. **Boros.**
  Lateral sutures not visible; third joint of antennæ longer;
    Mandibles with one tooth; body depressed; elytra striate. **Pytho.**
    Mandibles serrate; body subcylindrical; elytra confusedly punctured. **Priognathus.**

Of Pytho three species are known in our fauna; the other genera are represented by one species in each. One species of Pytho extends from Maine and Canada to Alaska, as does also Priognathus; Crymodes is found from Canada to British Columbia.

Tribe II.—**CONONOTINI.**

Head prominent, obtuse; metasternum short, hind margin almost straight, wings none; intercoxal process of abdomen very broad; middle coxæ nearly contiguous, closely embraced by the sterna, without trochantin; mandibles scarcely visible beyond the labrum; anterior coxæ small, conical, contiguous; tibial spurs very small.

This tribe consists of the genus Cononotus, of which three species are found under stones in California; they are slender, pale brown, finely pubescent insects of small size, having the thorax elongated, and regularly conical in form, and much narrowed behind; the lateral suture is nearly effaced, though still capable of being traced; the maxillary palpi are very long, and the last joint is large and triangular.

It is very difficult to indicate the affinities of this genus; it seems to be equally out of place in any family. It was formerly considered as allied to Apocrypha, of the Tenebrionidæ, a view adopted by Lacordaire; but the open anterior coxal cavities forbid such an association. The first and second ventral segments appear to be connate; should dissection confirm this observation, it will point very strongly towards the reception of the genus as a separate family.

Tribe III.—**SALPINGINI.**

Head prominent, front flattened, prolonged more or less into a broad beak; last joint of maxillary palpi not dilated; metasternum long, body winged, intercoxal process of abdomen acute; middle coxæ embraced by the sterna, without trochantin; mandibles not visible beyond the labrum; anterior coxæ conical, contiguous.

This tribe consists of species of small size; the genera are represented on both sides of the continent.

Beak broad, and very short.	**Salpingus.**
Beak prolonged.	**Rhinosimus.**

Fam. LXVI.—ŒDEMERIDAE.

Mentum trapezoidal, slightly narrowed in front, supported by a large gular process; ligula large, prominent, bilobed; labial palpi 3-jointed.

Maxillæ with large exposed base, and two flattened cilated lobes; palpi 4-jointed, last joint dilated in our genera.

Head slightly inclined, gradually, but not strongly narrowed behind, received into the thorax not as far as the eyes, which are tolerably strongly granulated in Calopus, but more finely in our other genera; front somewhat prolonged; epistoma subcoriaceous; labrum prominent; mandibles emarginate at tip, furnished on the inner margin with a membranous ciliated border.

Antennæ 11-jointed, nearly filiform, sometimes serrate.

Prothorax narrower at the base than the elytra, lateral suture wanting; coxal cavities widely open behind, confluent.

Mesosternum pointed behind; side pieces extending to the coxal cavities, which are generally confluent; metasternum long; side pieces narrow.

Elytra covering the abdomen; epipleuræ almost wanting; visible only near the base.

Abdomen with five free ventral segments, the 6th sometimes visible in the males.

Legs moderate; anterior coxæ large, conical, contiguous; middle coxæ conical, contiguous or slightly separated, sometimes with distinct trochantin; hind coxæ transverse, nearly contiguous; tibial spurs distinct; anterior and middle tarsi 5-jointed; hind tarsi 4-jointed; the penultimate joints dilated in our genera, and furnished with a dense brush of hairs beneath; claws simple, slightly dilated at the base.

Insects of moderate size found generally upon plants, though some species of Asclera live near water on the ground.

Our genera are as follows:—

Antennæ partly surrounded by the eyes; middle coxæ not contiguous. 2.
Antennæ not embraced by the eyes; middle coxæ contiguous. 3.
2. Clypeal suture not obvious. **Calopus.**
Clypeal suture very distinct. **Microtonus.**
3. Body slender. 4.
Body stout, tarsi with joints 2–4 spongy beneath. **Ditylus.**
4. Front tibiæ with one spur. 5.
Front tibiæ with two spurs. 6.

5.	Eyes feebly emarginate.	**Nacerdes.**
	Eyes deeply emarginate.	**Xanthochroa.**
6.	Claws simple or obsoletely toothed.	7.
	Claws strongly toothed at base.	9.
7.	Mandibles bifid at tip.	**Copidita.**
	Mandibles acute at tip.	8.
8.	Front prolonged into a broad beak.	**Rhinoplatia.**
	Front not prolonged.	**Oxacis.**
9.	Mandibles acute at tip.	**Probosca.**
	Mandibles bifid at tip.	**Asclera.**

Microtonus is founded on a very small brown sericeous insect, found on leaves in the Atlantic States. The last joint of the palpi is large and securiform; the antennæ are inserted at a small emargination of the eyes, are slender, one-half the length of the body, with the 2d joint one-third as long as the following one; the eyes are comparatively large, widely separated, and tolerably coarsely granulated; the front is crossed by a very distinct curved suture, just before the eyes; the penultimate joint of the tarsi is very slightly bilobed. The species *M. sericans* Lec. is small (.10–.15 unc. long) and slender, brown, densely punctured, and clothed with short sericeous pubescence; the thorax is as wide as the head, nearly square, feebly bisinuate at base, with the hind angles subacute, very feebly rounded on the sides, and generally vaguely impressed near the sides behind the middle.

FAM. LXVII.—CEPHALOIDAE.

Mentum small, nearly square, supported by a gular process; ligula membranous, broad, bilobed, prominent; labial palpi small, 3-jointed.

Maxillæ with the base large and prominent, and two long slender lobes ciliate at the tip; palpi 4-jointed, last joint triangular, obliquely truncate.

Head inclined, large, rhomboidal, gradually narrowed behind the eyes, suddenly constricted at base, inserted into the thorax by a not very slender neck; eyes small, reniform, finely granulated; mandibles small, acute at tip, subserrate on the inner margin with a broad membrane extending from the base half the length; labrum prominent; frontal suture not distinct.

Antennæ inserted at the sides of the front, under a small ridge in front of the eyes, 11-jointed; slightly thickened towards the tip.

Prothorax elongate, trapezoidal, as wide at base as the elytra, lateral suture wanting; coxal cavities large, confluent, open behind.

Mesosternum acute; side pieces reaching the coxal cavities, which are confluent; metasternum long, side pieces narrow.

Elytra gradually narrowed from the base, as long as the abdomen; epipleuræ narrow but distinct, not extending to the tip.

Abdomen with six free ventral segments, the 6th short, deeply emarginate in the male, permitting the 7th to be seen.

Legs long and slender; anterior and middle coxæ large, conical, contiguous, with distinct trochantins; hind coxæ slightly oblique, prominent, concave behind near the tip; tibial spurs long, slender; tarsi filiform, pubescent beneath; claws pectinate, each with a large appendage, as long as the claw itself, and obtusely rounded at the tip.

The characters above given are sufficient to show that the genus Cephaloon should rank as a distinct family. It was placed by Newman, who first described it in Œdemeridæ, by Dr. Le Conte in Meloidæ, and more recently by Motschulsky in Melandryidæ. None of these positions will, probably, be found correct. From the Meloidæ it differs by the thorax being as broad at base as the elytra, as well as by the different form of the head. From Melandryidæ it differs not only by the head being constricted at base, but by the lateral suture of the prothorax being wanting, and by the greater number of ventral segments. Its resemblance to Œdemeridæ is more decided, though from them it is at once distinguished by the head being constricted at base, as well as by the peculiar form of the claws.

Two species of Cephaloon occur in the northern part of the Atlantic region, and a third one in Washington Territory; species are also found in Siberia, in the Amur district.

Fam. LXVIII.—**MORDELLIDAE.**

Mentum trapezoidal, supported by a gular process; ligula prominent, cordiform; palpi 3-jointed, last joint triangular.

Maxillæ with large, prominent base, and two ciliated lobes; palpi 4-jointed, rather long, with the last joint securiform or cultriform, sometimes transverse.

Head vertical, applied closely to the thorax, suddenly constricted immediately behind the eyes, connected with the prothorax by a very small neck; eyes small and coarsely granulated in the first tribe, large and finely granulated in the second; labrum prominent; mandibles short, entire at tip, with an internal membranous margin.

Antennæ inserted at the sides of the front, before the eyes, 11-jointed, slender, usually slightly thickened externally.

Prothorax strongly narrowed in front, as wide at base as the elytra; lateral suture quite obvious; coxal cavities large, open behind, confluent.

Mesosternum short, carinated, pointed behind, side pieces attaining the coxal cavities, which are not confluent; metasternum large, but not long, side pieces variable in width.

Elytra narrowed behind, not truncate, leaving exposed the tip of the abdomen; epipleuræ not distinct.

Abdomen with five or six ventral segments; the last dorsal and sixth ventral are prolonged in the second tribe, forming an anal style.

Legs, anterior short, posterior usually long; anterior coxæ large, conical, contiguous, without trochantin; middle coxæ not prominent, slightly separated; hind coxæ flat, contiguous, moderate in size in the first, very large in the second tribe; tibial spurs large, hind tibiæ frequently dilated; hind tarsi compressed, long; claws simple in the first, cleft to the base, with the upper portion pectinate, in the second tribe.

Two tribes are thus separated:—

Abdomen not prolonged at tip; claws not cleft.	ANASPINI.
Abdomen prolonged at tip; claws cleft and pectinate.	MORDELLINI.

Insects of small size, found on plants; all are pubescent; many are very prettily variegated in color.

Tribe I.—ANASPINI.

Body rather fusiform than cuneate; hind coxæ not very large, tibiæ slender; claws neither cleft nor serrate; last dorsal segment of the abdomen not prolonged, sixth ventral not visible in Anaspis, but visible in the other two genera; eyes oval, narrowly emarginated, coarsely granulated; antennæ inserted very near the eyes, not serrate; upper surface of the body transversely strigate.

Our genera are three:—

Anterior and middle tarsi with the 3d and 4th joints equal;	
Antennæ long, scarcely thickened externally.	**Diclidia.**
Antennæ shorter, last five joints broader.	**Pentaria.**
Anterior and middle tarsi with the 4th joint very small.	**Anaspis.**

Diclidia contains one species from Texas. Pentaria *Muls.* was separated by Dr. Le Conte formerly as *Anthobates*, but under false characters, so that the name should be rejected, and the more recent one adopted; the species are found on each side of the continent, and have the elytra ornamented with broad bands. Anaspis is also found on both sides of the continent.

Tribe II.—**MORDELLINI.**

Body cuneiform, pointed behind; hind coxæ very large; hind tibiæ short, dilated, triangular; claws cleft to the base, with the upper portion pectinate; last dorsal segment of abdomen prolonged, forming an anal style or process; eyes large, oval, finely or coarsely granulated; antennæ inserted in front of the eyes, but not very near to them, sometimes serrate.

Our genera may be separated as follows:—

Eyes finely granulated; hind tibiæ with a small, subapical ridge;	
Scutellum emarginate; anal style short, obtuse.	**Tomoxia.**
Scutellum triangular; anal style long, slender.	**Mordella.**
Eyes coarsely granulated; hind tibiæ and tarsi with oblique ridges on the outer face;	
Hind tibiæ with one long ridge, and no subapical one.	**Glipodes.**
Hind tibiæ with subapical and oblique ridges.	**Mordellistena.**

Glipodes is very remarkable for the structure of the last joint of the maxillary palpi in the male; it is covered on the under surface with a dense brush of short hair, and from the base on the outer side proceeds a long, bifurcated appendage, the branches of which are as long as the joint itself. Tomoxia includes *Glipa* Lec. *Sphalera* Lec. has been suppressed into Mordella.

Mordella and Mordellistena occur on both sides of the continent; the other genera are thus far known only in the Atlantic States.

FAM. LXIX.—**ANTHICIDAE.**

Mentum trapezoidal, narrower in front, supported by a broad gular process; ligula large, prominent; labial palpi 3-jointed.

Maxillæ with large, exposed base, and two flattened, ciliate lobes; palpi 4 jointed.

Head somewhat inclined, strongly constricted behind the eyes; neck slender, front somewhat prolonged, labrum prominent; mandibles not extending beyond the labrum, truncate or emarginate at tip.

Antennæ inserted at the sides of the front, immediately before the eyes, 11-jointed, nearly filiform, very rarely flabellate.

Prothorax narrower than the elytra at base, lateral suture wanting; anterior coxal cavities open behind, confluent.

Mesosternum pointed behind, usually very slightly separating the coxæ, rarely the coxal cavities are confluent; side pieces extending to the cavities; metasternum long, side pieces narrow.

Elytra covering the abdomen, rounded behind; epipleuræ very narrow.

Abdomen with five free ventral segments, rarely six.

Legs moderate; anterior coxæ conical, prominent, contiguous; middle ones subconical, with distinct trochantin, nearly or quite contiguous; hind ones transverse, nearly contiguous in the first three tribes, more distinctly separated in the fourth tribe; tibial spurs small; anterior and middle tarsi 5-jointed; hind tarsi 4-jointed; the penultimate joint of all generally emarginate; claws simple, except in Nematoplus, Pedilus, and Macratria.

This family contains the Anthicites and Pedilides of Lacordaire, excluding Scraptia, which appears to be more related to the Melandryidæ. The family is thus rendered very homogeneous, and divides into four natural tribes:—

Eyes more or less emarginate; hind coxæ approximate;
  Head constricted far behind the finely granulated eyes. PEDILINI.
  Head constricted just behind the coarsely granulated eyes. XYLOPHILINI.
Eyes elliptical, entire, rather coarsely granulated;
  Hind coxæ approximate. MACRATRIINI.
  Hind coxæ somewhat distant. ANTHICINI.

Tribe I.—**PEDILINI.**

The species of this tribe are of much larger size than those of the other tribes, varying in size from one-fourth to one-half an inch in length; they are found on flowers.

The head is constricted far behind the eyes, which are tolerably finely granulated, never regularly oval, and always emarginate, though in some of the species of the second group very slightly so; the neck is not very slender; the hind coxæ are nearly contiguous, the intercoxal process being very small and acute.

The genera indicate three groups:—

Claws cleft to the base.	NEMATOPLI.
Claws slightly dilated at the base.	EURYGENII.
Claws with a broad basal tooth.	PEDILI.

Group I.—**Nematopli.**

Nematoplus collaris Lec., a slender black insect with a reddish-yellow thorax, alone constitutes this group; the mandibles are acutely emarginate at tip; the epistoma is not separate from the front; the maxillary palpi are but feebly dilated; the middle coxæ are distinctly separated; the abdomen of the male has six ventral segments, the fifth being emarginate; the tarsi are entirely filiform, and the claws are cleft to the base, as in Stenotrachelus.

The insect is very rare, and is found in the northwestern States.

Group II.—**Eurygenii.**

Elongate insects clothed with gray pubescence; the mandibles are broadly truncate at tip; the epistoma is not separate from the front; the maxillary palpi are considerably dilated; the middle coxæ are very slightly separated; the abdomen in both sexes has but five ventral segments; the anterior tarsi are somewhat dilated, and the penultimate joint of all is bilobed; the claws are very slightly dilated at base.

Terminal joint of antennæ not elongated;	
Last joint of maxillary palpi broad, securiform.	**Eurygenius.**
Last joint of maxillary palpi long, cultriform.	**Stereopalpus.**
Terminal joint of antennæ much longer;	
Last joint of maxillary palpi elongate, subtriangular.	**Bactrocerus.**

The three species of the first genus differ in the form of the eyes; in *E. Wildii* Lec. they are deeply emarginate, in the Californian *E. constrictus* Lec. slightly, and in *E. murinus* scarcely at all emarginate. Those of the second genus have the eyes very slightly emarginate; in both the eyes are less finely granulated than in the first and third groups. Bactrocerus occurs in Lower California.

Group III.—**Pedili.**

This group consists of but a single genus, Corphyra, represented by numerous species in both the Atlantic and Pacific districts. They are prettily colored insects, with the thorax globose, polished, and usually yellow; in the males of some species the tips of the elytra are convex and polished, resembling somewhat a vesicle, in others subcaudate, rarely simple as in the female. The antennæ are usually slender and subserrate in both sexes, species however occur with the male antennæ pectinate or almost flabellate.

The mandibles are truncate; the epistoma separated from the front by a transverse suture; the maxillary palpi feebly dilated; the middle coxæ are contiguous; the abdomen of the male has six distinct ventral segments; the penultimate joint of the tarsi is bilobed, and the claws are suddenly dilated at base into a broad tooth.

Tribe II.—**XYLOPHILINI.**

A few small species, found on leaves and flowers, are contained in this tribe; they have entirely the form and appearance of species of Anthicus, but are known at once by the emarginate, hairy, and coarsely granulated eyes.

The head is much deflexed, and constricted immediately behind the eyes; the epistoma is separate from the front; the neck is very small; the last joint of the maxillary palpi is large and securiform; the middle coxæ are contiguous; the hind coxæ are nearly contiguous, the intercoxal process being very small; the first joint of the hind tarsi is extremely long; the antepenultimate joint is bilobed, and the claws are simple.

One species, *Xylophilus Melsheimeri* Lec., is remarkable for the antennæ of the male being flabellate; in another species, *X. basalis* Lec., the last joint of the antennæ is considerably longer than the others. *X. brunnipennis* extends from the Atlantic region to California; otherwise there is no species known to us from the Pacific slope.

Tribe III.—**MACRATRIINI.**

Two very narrow, brown, pubescent species of **Macratria** are found in the Atlantic States, on flowers and leaves.

The head is deflexed, constricted far behind the eyes, which are oval, and not at all emarginate, somewhat coarsely granulated, and slightly hairy; the neck is very small; the epistoma is not separate from the front; the maxillary palpi are compressed and dilated, with the last joint large and securiform; the last three joints of the antennæ are longer than the others; the middle coxæ are distinctly separated; the hind coxæ are nearly contiguous; the intercoxal process of the abdomen is very small and acute; the first joint is longer than the others, and the sixth is visible in the male; the penultimate joint of the tarsi is bilobed; the first joint of the hind tarsi is very long; the claws are suddenly and broadly dilated at base.

Tribe IV.—**ANTHICINI.**

Head deflexed, constricted behind the eyes, which are regularly oval, and rather coarsely granulated; the epistoma is not separate from the front; the neck is very small; the mandibles are emarginate at tip; the last joint of the maxillary palpi is moderately dilated; the middle coxæ are nearly contiguous in other genera, but absolutely so in Tanarthrus; the hind coxæ are moderately separated; the intercoxal process is acute at tip, except in Formicomus, where it is broad and obtuse; the ventral segments are five in both sexes; the penultimate joint of the tarsi is bilobed except in Mecynotarsus, and the claws are simple.

Our genera are:—

Antennæ with the 11th joint equal to the 10th;	
Thorax prolonged over the head into a horn;	
Posterior tarsi not longer than the tibiæ.	**Notoxus.**
Posterior tarsi much longer than the tibiæ.	**Mecynotarsus.**
Thorax not prolonged over the head;	
Antennæ moniliform; thighs thickened.	**Tomoderus.**
Antennæ not moniliform;	
Body without wings; humeral angles rounded.	**Formicomus**
Body winged; humeral angles distinct.	**Anthicus.**
11th joint of antennæ elongated, almost divided into two.	**Tanarthrus.**

The species are numerous; the genera, except Tanarthrus, are represented on the Atlantic district, but thus far no species of Tomoderus has occurred in the Pacific region. The differences between the third, fourth, and fifth genera seem rather indefinite. Tanarthrus, besides the elongated 11th joint of the antennæ, and contiguous middle coxæ, is farther remarkable for having the elytra shorter than the abdomen, and subtruncate at the extremity. The genus contains but three species, from the Colorado Desert and Utah, one of which, *T. salinus* Lec., flies and runs on salt mud, after the manner of a Cicindela. The species of Notoxus live on flowers and leaves; those of Anthicus are very numerous; some are found on plants, but the greater number live near the margin of water, especially in sandy localities. Three species of Mecynotarsus occur, two of which are from the Atlantic region, the other from California.

FAM. LXX.—**PYROCHROIDAE.**

Mentum trapezoidal, narrowed in front, supported by a large gular process; ligula large, prominent, bilobed, labial palpi 3-jointed.

Maxillæ with large exposed base, and two corneous ciliated lobes; palpi 4-jointed, moderately dilated.

Head somewhat inclined, strongly constricted a short distance behind the eyes, which are emarginate and not finely granulated, and sometimes very large; neck not very slender, received in the thorax; labrum prominent; mandibles short, emarginate at tip.

Antennæ inserted at the sides of the front just before the eyes, 11-jointed; serrate or subpectinate (♀), and ramose (♂); rarely (Ischalia) nearly filiform.

Prothorax narrower than the elytra at base, lateral suture completely wanting; anterior coxal cavities widely open behind, confluent.

Mesosternum pointed behind; side pieces attaining the coxal cavities, which are confluent; metasternum long, side pieces narrow.

Elytra wider than the abdomen, rounded at tip; epipleuræ almost wanting, visible only near the base.

Abdomen with five free ventral segments; the 5th in the male is emarginate, and the 6th is visible.

Legs rather long; anterior coxæ large, conical, contiguous; middle coxæ conical, contiguous, with distinct trochantin; hind coxæ oblique, transverse, slightly separated; tibial spurs small; anterior and middle tarsi 5-jointed; hind tarsi 4-jointed; the penultimate joint is dilated and somewhat prolonged beneath; the claws are simple.

A few insects, from one-third to three-fourths of an inch long, are comprised in this family; our species live under bark, and several are conspicuous for the rufous thorax, which contrasts with the black head and elytra.

The genera are four from the Atlantic States, of which Dendroides is also represented in Alaska:—

Eyes moderate in size, distant;	
Antennæ simple.	**Ischalia.**
Antennæ serrate or ramose;	
Last joint of maxillary palpi long, cultriform.	**Pyrochroa.**
Last joint of maxillary palpi long, oval.	**Schizotus.**
Eyes very large, sometimes nearly contiguous.	**Dendroides.**

The branches of the male antennæ are rigid in Pyrochroa, and very slender and flexible in Dendroides; in Schizotus they are of an intermediate form, and somewhat flexible.

Ischalia is represented by a very remarkable insect, *I. costata* Lec., from the Southern States. It is of a testaceous color (.2 unc. long), with the head black, the front retuse; the thorax is semicircular, with the sides thickened and reflexed, and the middle strongly carinate; this carina is prolonged into a point at the base. The elytra are elongate oval, very coarsely punctured, flattened on the back, with a very strong ridge running from the humerus nearly to the tip, and another very near the margin from near the base to the tip itself, thus causing the appearance of distinct epipleuræ; the elytra are dusky, with a long lateral spot and the tip pale. The consistence of the body is firmer than in the other genera of the family, but no structural difference of importance exists except the form of the antennæ, which are not very slender, but cylindrical; the 2d joint is one-half as long as the third; the last joint of the maxillary palpi is large and securiform; the eyes are distant and moderate in size. A second species *I. indigacea* Pasc. occurs in Borneo.

Fam. LXXI.—**MELOIDAE.**

Mentum trapezoidal, supported by a large gular process; ligula promint, labial palpi 3-jointed.

Maxillæ with two corneous ciliated lobes, the outer one in some Nemognathini very long and filiform; the inner one sometimes very small; palpi 4-jointed.

Head much inclined, suddenly constricted far behind the eyes into a small neck, which is not entirely received into the prothorax; eyes variable in form, finely granulated; labrum prominent; mandibles usually not extending beyond the labrum, frequently entire at tip, or armed with a small subapical tooth, rarely (Phodaga) emarginate at tip.

Antennæ 11-jointed (8-jointed in Cordylospasta), inserted (except in Phodaga) at the sides of the front, before the eyes.

Prothorax narrower at base than the elytra, lateral suture completely obliterated; prosternum short; coxal cavities large, confluent, widely open behind.

Mesosternum short, triangular, side pieces attaining the coxal cavities, which are confluent; metasternum very short in the first tribe, generally long in the second.

Elytra variable in form, but when short never truncate; epipleuræ not well defined.

Abdomen with six free ventral segments.

Legs long, anterior and middle coxæ large, conical, contiguous; hind coxæ transverse, prominent, more or less concave beneath, nearly contiguous; tibial spurs distinct, those of the hind tibiæ frequently differing in size and form; anterior and middle tarsi 5-jointed; hind tarsi 4-jointed; penultimate joint almost always cylindrical; claws usually divided at the base, with the inferior portion very slender; rarely not divided, and then armed with a large tooth.

This family contains species of moderate or large size found on plants; they are mostly of a soft consistence, and are remarkable in possessing a peculiar principle, cantharidine, from which they derive the blistering power, which causes them to be used in medicine.

They are equally remarkable in the development of the larva, which assumes successively several forms, in the first of which it is a very small active Pediculus-like parasite infesting bees of different genera, and is called a triunguline.

Two tribes, first properly recognized by Lacordaire, are thus separated.

Side pieces of meso- and metathorax covered by the elytra; the inflexed portion very wide. Meloini.
Side pieces of meso- and metathorax visible; the inflexed portion narrow. Cantharini.

Tribe I.—MELOINI.

The insects composing this tribe are without wings; the elytra are frequently much shorter than the abdomen, and in one genus are imbricated, or overlap at the suture, the inflexed part is very wide; the metasternum is very short, so that, except in Henous, the middle coxæ extend partly over the hind coxæ; the side pieces of the meso- and metathorax are entirely covered by the elytra; the claws are sometimes armed with a tooth, sometimes cleft to the base; in this case the upper portion is never pectinate, as in certain genera of the next tribe. The frontal suture is distinct, and the front is prolonged before the insertion of the antennæ.

Our genera are:—

Claws toothed near the base;
  Elytra larger than the abdomen, inflated, connate. **Cysteodemus.**
  Elytra short, divergent from the scutellum, abdomen very large. **Megetra.**
Claws cleft, the upper and lower portions equal;
  Elytra short, imbricated. **Meloe.**
  Elytra short, not imbricated. Nomaspis
  Elytra moderate, subconnate. **Henous.**
Claws with the lower portion shorter than the upper, and connate with it;
  Elytra moderate, contiguous for a short distance at base. **Poreospasta.**

Meloe is generally diffused, and is the only genus represented on the Eastern Continent; Henous is found from Kansas to Texas; Cysteodemus in Arizona and Colorado Desert; the genus *Megetra* Lec. (Arcana naturæ, i. 127) is founded upon *Meloe cancellatus* Er., and *Cysteodemus vittatus* Lec., which occur in New Mexico and Arizona. *Poreospasta polita* Horn occurs in California.

Tribe II.—CANTHARINI.

Body generally winged; elytra, in our genera, not shorter than the abdomen, entirely closing together along the suture; metasternum usually long; middle coxæ not overlapping the hind coxæ; side pieces of meso- and metathorax plainly visible, not covered by the elytra; claws generally cleft to the base, the upper portion sometimes pectinate; very rarely they are armed with a tooth.

The genus Hornia, of the third sub-tribe, makes an exception to nearly all of the above characters. It is an entirely anomalous form, and is placed here by reason of its uncovered sternal side-pieces.

Sub-tribes may be separated as follows:—

Front not prolonged beyond the base of the antennæ; labrum small, scarcely visible. HORIINI.
Front prolonged; frontal suture distinct; labrum always distinct;
  Mandibles prolonged, acute; maxillary lobes often prolonged. NEMOGNATHINI.
  Mandibles not prolonged, usually obtuse;
    Elytra rudimentary. SITARINI.
    Elytra entire;
      Antennæ arcuate and thickened externally. MYLABRINI.
      Antennæ straight, not clavate. CANTHARINI.

Sub-Tribe 1.—**Horiini.**

Head large, squarely truncate behind; front without suture, scarcely extending beyond the insertion of the antennæ, which are not very long, and not thickened towards the extremity; the eyes are transverse, and subreniform; the mandibles extend beyond the labrum, and in some males of Horia are quite large; the lobes of the maxillæ are not elongated, and the palpi are not dilated; the claws of the tarsi are cleft to the base, the upper portion is finely pectinate, the lower one is very slender; the tarsi are clothed with stiff hairs or bristles beneath.

Two genera occur in our fauna:—

Head large, trapezoidal; last joint of maxillary palpi shorter than the third. **Horia.**
Head moderate, triangular; last joint of maxillary palpi longer than the third. **Tricrania.**

Of Horia one species, *H. maculata* Swed., occurs in south-western Arizona, also in Mexico and S. America; it is a large insect, reddish testaceous in color, with black spots on the elytra, forming three transverse arcuate series, the tip is also black. Three species of Tricrania are known, from the Atlantic region, Colorado, and Oregon.

Sub-Tribe 2.—**Nemognathini.**

Head triangular, squarely truncate behind (except in Gnathium); front with distinct transverse suture, prolonged beyond the insertion of the antennæ, which are filiform or very slightly thickened externally; the eyes are transverse, rarely (Gnathium) oval and oblique; the mandibles are acute at tip and extend beyond the labrum; the outer lobe of the maxillæ is generally prolonged into a slender, flexible process, sometimes nearly as long as the body; the maxillary palpi are not dilated, and the last joint is longer than the preceding; the claws of the tarsi are cleft to the base, the upper portion is strongly pectinate, the lower one equal in length, acute, and generally more slender than the upper; the tarsi are clothed with stiff hairs beneath.

The serrature of the upper part of the claws is not sufficient by itself to separate this from the fifth sub-tribe, since in it there are certain foreign genera, scarcely to be distinguished in appearance from Cantharis, in which the upper part of the claws is quite distinctly serrate; but the marked difference in appearance produced by the triangular head, which is usually applied more closely than in Cantharis to the square prothorax, and especially the more prominent and acute mandibles, evince the propriety of separating the three genera below mentioned from those contained in that sub-tribe.

Maxillæ with the outer lobe prolonged, setaceous;	
Antennæ not thickened externally.	**Nemognatha.**
Antennæ thicker towards the tip.	**Gnathium.**
Maxillæ with the outer lobe not prolonged.	**Zonitis.**

The species of Nemognatha differ like those of Cantharis in the size and shape of the spurs of the hind tibiæ; in Gnathium, the prothorax, instead of being square, as in the other two genera, is gradually narrowed in front, but, as if to balance this approach towards the next sub-tribe, the mandibles are still longer and more acute than in Nemognatha.

Sub-Tribe 3.—**Sitarini.**

Head triangular, suddenly constricted behind; front with distinct transverse suture, prolonged beyond the insertion of the antennæ, which are rather stout, not thickened externally. The mandibles are acute, and extend beyond the labrum; outer lobe of maxillæ not elongated. Prothorax elongate. Elytra very small, and wings wanting in Hornia; dehiscent, with perfect wings in the foreign genera. Claws cleft as usual in the foreign genera, simple in Hornia.

Hornia minutipennis Riley, parasitic on *Anthophora sponsa*, is the only representative in our fauna. The abdomen is very large in both sexes, and with a double series of corneous plates in the ♂, or entirely membranous ♀. From the large abdomen and small elytra it was at one time considered a Meloine. It occurs in the Atlantic region.

Sub-Tribe 4.—**Mylabrini.**

Head moderate in size, frontal suture distinct, clypeus slightly prolonged beyond the insertion of the antennæ; labrum distinct; eyes oval or transverse; antennæ short, joints closely articulated and gradually broader externally; mandibles not prominent; lobes of maxillæ not prolonged; elytra entire, contiguous along the suture; tarsal claws variable in form. Body winged.

This tribe differs from the next by the structure of the antennæ. The joints are closely placed, and together form an elongate club more or less arcuate. In foreign genera the claws are cleft, the two divisions equal. In the only representative in our fauna, *Cordylospasta Fulleri* Horn, the under portion of the claws is shorter than the upper, and connate with it, the suture, however, distinct. The antennæ have but eight joints, the terminal joint being an elongate mass, equalling in length the four preceding joints; composed, probably, of four joints without traces of sutures dividing them.

The species occurs in Nevada.

Sub-Tribe 5.—**Cantharini** (genuini).

Head variable in form; front with a very distinct transverse suture, prolonged beyond the insertion of the antennæ; the eyes are transverse and subreniform, except in Phodaga, where they are regularly oval; the antennæ are variable in form, but inserted in front of the eyes, except in Phodaga and Eupompha, where they are situated between the eyes; the mandibles are thick, and obtuse, rarely (Phodaga) emarginate at tip; the palpi vary in form; the lobes of the maxillæ are not prolonged; the claws of the tarsi are usually cleft to the base; the upper part is not serrate in our genera, and the under part is usually equal in length to the upper one: in Phodaga, Eupompha, Tegrodera, the under portion is connate with the upper one, and only half as long.

Four natural groups appear to exist among our genera:—

Vertex not elevated;	
2d joint of antennæ long.	MACROBASES.
3d joint of antennæ much longer than the 2d.	CANTHARIDES.
Vertex elevated; 2d joint of antennæ small;	
Mandibles obtuse.	EUPOMPHÆ.
Mandibles emarginate.	PHODAGÆ.

Group I.—**Macrobases.**

The eyes are strongly transverse and broadly emarginate; the antennæ are inserted in front of the eyes; the first joint is usually much elongated, especially in the males, frequently compressed and bent in that sex; the second joint is larger in the males than in the females, and is generally longer than the third, sometimes much longer, but in several species the second is not longer than the third; the vertex is not elevated; the last joint of the maxillary palpi is triangular and obliquely truncate; the mandibles are thick and obtuse, with a small tooth near the apex. The anterior thighs have a sericeous spot of hair on the under surface. The spurs of the hind tibiæ are always slender, and the divisions of the claws equal; the tarsi are pubescent beneath.

One genus, Macrobasis, occurs in our fauna, containing a moderate number of species, found in the Atlantic and Central districts; none have as yet occurred in the Pacific region.

Group II.—**Cantharides.**

The eyes are transverse and broadly emarginate; the antennæ are inserted in front of the eyes, with the second joint much shorter than the third, and except in Pleuropompha, very small; they are sometimes filiform, sometimes with the outer joints larger and rounded; the vertex is not elevated; the last joint of the maxillary palpi is broadly rounded at tip; the mandibles are truncate, and have a small tooth near the apex; the spurs of the hind tibiæ are variable in form; the divisions of the claws of the tarsi are usually equal; in Calospasta and Tegrodera, the under one is shorter, and connate with the upper; the tarsi are pubescent beneath.

Our genera may be thus arranged:—

- Penultimate joint of tarsi bilobed. **Tetraonyx.**
- Penultimate joint of tarsi cylindrical;
  - Lower portion of claws equal to the upper, and separate;
    - Anterior thighs with a sericeous spot (antennæ filiform);
      - 2d joint of antennæ equal to half the 3d; elytra costate. **Pleuropompha.**
      - 2d joint of antennæ very short; elytra even;
        - Mandibles prolonged, meeting beyond the labrum. **Gnathospasta.**
        - Mandibles short. **Epicauta.**
    - Anterior thighs without a sericeous hairy spot;
      - Antennæ filiform, outer joints cylindrical. **Pyrota.**
      - Antennæ thicker externally, outer joints oval or rounded;
        - Labrum deeply emarginate. **Pomphopœa.**
        - Labrum slightly emarginate. **Cantharis.**
  - Lower portion of claws shorter than the upper, connate;
    - Labrum not emarginate; body pubescent. **Calospasta.**
    - Labrum emarginate; body glabrous. **Tegrodera.**

The form of the spurs of the hind tibiæ varies greatly in nearly all the genera. Cantharis and Epicauta are found on both sides of the continent; Pomphopœa and Tetraonyx are confined to the Atlantic States. Calospasta contains five species, and Tegrodera but one large and beautiful species, *T. erosa* Lec., all from California. Pleuropompha is founded upon *Lytta costata* Lec., from New Mexico.

There is much difference between the various species of Cantharis in the form of the outer joints of the antennæ, which are quite transverse in some and elongate in others; the entirely cylindrical shape is never assumed.

The sexual characters are remarkable in some of the species; thus, in the male of *Canth. Nuttalli*, the trochanters of the hind legs are armed with a spine; in the male of *Pyrota mylabrina* and *insulata* the last joint of the maxillary palpi is ovate, broadly transverse, and flattened, with the under surface concave and spongy. The antennæ of the male of *Pleuropompha costata* Lec. are longer than those of the female, and the difference is caused by the elongation of the third, fourth, and fifth joints, which thus become more than twice as long as any of the following ones.

Group III.—**Eupomphæ.**

A single New Mexican species, *Eupompha fissiceps* Lec., is known; it has the shape of Cantharis, with the thorax and elytra metallic bluish-green, the head and legs yellow, the elytra reticulated, and the head divided by a very deep groove.

The eyes are oval and oblique; the antennæ are filiform, with the second joint very short, and are inserted between the eyes; the vertex is elevated, obtusely rounded, and deeply cleft; the last joint of the maxillary palpi is oval; the mandibles are obtuse, with a subapical tooth; the anterior thighs have no sericeous spot; the outer spur of the hind tibiæ is obtuse; the tarsi are pubescent beneath; the claws are not serrate, the under portion is about one-third shorter than the upper, and connate with it.

In the male the first three joints of the front tarsi are very much swollen, and very convex beneath, and deeply excavated above.

Group IV.—**Phodagæ.**

Like the preceding, this group contains but a single species, *Phodaga alticeps* Lec., from Arizona; it is entirely black, and finely pubescent.

The eyes are oval and longitudinal; the antennæ are not longer than the head, inserted between the eyes, and filiform, with the second joint very short; the last joint of the maxillary palpi is oval; the labial palpi have the last joint cylindrical, a little shorter than the penultimate, which is triangular; the mandibles are deeply emarginate at tip; the head behind the eyes is conical, and the vertex is very prominent; the anterior thighs have no sericeous spot; the spurs of the hind tibiæ are long, slender, and acute; the tarsi are spinous beneath; the claws are not serrate, the under portion is about one-third shorter than the upper, and connate with it.

The male has the first joint of the anterior tarsi long, compressed, somewhat contorted and prolonged on the inner side; the middle tibia is dilated, arcuate, and deeply longitudinally excavated on the inner face.

FAM. LXXII.—**RHIPIPHORIDAE.**

Mentum trapezoidal, supported by a gular process; ligula membranous, prominent, frequently bilobed; labial palpi 3-jointed.

Maxillæ with prominent base, and two lobes, which are connate at base, the inner one sometimes atrophied; maxillary palpi 4-jointed, not dilated.

Head vertical, affixed to the prothorax by a very slender neck, which is entirely contained in the prothorax; vertex usually elevated; eyes large, very finely granulated, except in the first tribe; mandibles not emarginate at tip, entirely corneous, without any membranous border on the inner margin; labrum prominent.

Antennæ 11-jointed (10-jointed in certain females), pectinate or flabellate in the males, frequently serrate in the females.

Prothorax as large as the elytra at the base, much narrowed in front, lateral suture wanting (in our genera); coxal cavities large, open behind, confluent.

Mesosternum short, declivous, separating the coxæ; side pieces very wide, attaining the coxæ; metasternum large; side pieces narrow in the first, wide with large epimera in the other tribes.

Elytra rarely covering the abdomen, usually narrowed behind, and dehiscent, sometimes (Myodites) very small; rarely (Rhipidius) wanting in the female, in which case the wings are also wanting, and the body is larviform.

Abdomen with free segments, variable in number.

Legs generally long; anterior coxæ large, conical, contiguous, without trochantin, overlying the middle coxæ, which are transverse or oblique, usually slightly separated, without trochantins; hind coxæ transverse, lamellate, contiguous; spurs of tibiæ usually distinct; tarsi filiform, anterior and middle ones 5-jointed, hind ones 4-jointed; claws pectinate or toothed, rarely simple.

The perfect insects are found on flowers; the larvæ of the second tribe are known to be parasitic on Hymenopterous, and those of the fourth on Orthopterous insects.

Four tribes are thus distinguished:—

Elytra as long as the abdomen, not dehiscent. EVANIOCERINI.
Elytra shorter than the abdomen;

Oral organs perfect;	
Middle coxæ contiguous.	RHIPIPHORINI.
Middle coxæ widely separated.	MYODITINI.
Oral organs atrophied.	RHIPIDIINI.

Tribe I.—**EVANIOCERINI.**

Oral organs perfect; eyes rather finely granulated, oval, feebly emarginate in Pelecotoma, widely divided in Toposcopus; antennæ 11-jointed, inserted at the sides of the front, flabellate from the fourth joint ♂, or serrate ♀; lateral margin of thorax obliterated, the base lobed at middle, serrate each side, the scutellum visible; elytra entire, covering the abdomen; middle coxæ narrowly separated; metasternal side pieces narrow; abdomen with five ventral segments; tarsal claws serrate or dentate in our genera.

Two genera occur in our fauna:—

Eyes oval, feebly emarginate.	**Pelecotoma.**
Eyes divided, the two portions widely separated.	**Toposcopus.**

Pelecotoma flavipes Mels. occurs in the Atlantic region; the claws are feebly bidentate. *Toposcopus Wrightii* Lec. is found in New Mexico; the claws are serrate.

Tribe II.—**RHIPIPHORINI.**

Oral organs perfect; eyes entire, very finely granulated; antennæ inserted between the eyes upon the front, biflabellate in the males, serrate in the females; scutellum covered by a lobe of the base of the prothorax; lateral suture of prothorax entirely wanting; elytra not much shorter than the abdomen, pointed behind, not meeting closely along the suture; middle coxæ slightly separated; epimera of metathorax large, episterna wide; ventral segments five; tarsi long; claws bifid at tip.

Cuneiform insects with coarsely punctured and sparsely pubescent surface, of varied colors, found upon flowers.

Our species all belong to Rhipiphorus, for which the name *Emmenadia* has been substituted in the Munich catalogue.

Species occur in the Atlantic and Pacific regions.

Tribe III.—**MYODITINI.**

Oral organs perfect; labrum not visible; eyes not emarginate, very finely granulated; antennæ inserted on the front, inside of the eyes, on a line with their anterior margin, flabellate in both sexes, but with the tenth and eleventh joints connate in the females; scutellum not covered by the prothorax; lateral suture of prothorax entirely wanting; elytra very small, wings not folded; middle coxæ very widely separated; epimera of metathorax large, episterna wide; ventral segments five, with the genital sheath of both sexes prominent.

One genus, Myodites, is contained in this tribe; it is represented on both sides of the continent. *Rhipidophorus* is used in the Munich Catalogue in place of Myodites.

Tribe IV.—**RHIPIDIINI.**

Oral organs atrophied; eyes very large, finely granulated, occupying the greater part of the head; antennæ (of the males) contiguous, flabellate; prothorax without any trace of lateral suture; scutellum not covered by prothorax; elytra short, pointed, dehiscent; wings not folded; middle coxæ not widely separated; ventral segments eight.

Female without elytra and wings; larviform.

No species of Rhipidius has yet been found in the United States; but as *Blatta germanica*, in which *R. pectinicornis* is parasitic, has been introduced, it is proper that the attention of observers should be directed to the discovery of its parasite.

FAM. LXXIII.—**STYLOPIDAE.**

Oral organs atrophied, except the mandibles and one pair of palpi.

Head large, transverse, vertical, prolonged at the sides, forming a stout peduncle, at the end of which are situated the eyes, which are convex, and very coarsely granulated.

Antennæ inserted on the front, at the base of the lateral processes of the head; forked in our genera.

Prothorax exceedingly short.

Mesothorax short, bearing at each side a slender, coriaceous, club-shaped appendage, with the inner margin membranous; this appendage represents the elytra.

Metathorax very large, greater in bulk than the rest of the body, with the sutures of the dorsal pieces all distinct; the postscutellum is conical and prolonged far over the base of the abdomen; wings very large, fan-shaped, with a few diverging nervures; the epimera are very large, and project behind almost as far as the postscutellum.

Abdomen small, with from seven to nine segments.

Legs short; anterior and middle coxæ cylindrical, prominent; hind coxæ very small, contiguous, quadrate; tibiæ without spurs; tarsi without claws, joints each with a membranous lobe beneath.

Females larviform, always contained in the pupa case in the body of the wasp or bee.

This family contains a small number of species which, by the degradation of structure, have lost all resemblance to the other members of the order Coleoptera. They were, from the period of their discovery to within a few years, considered as a separate order, under the name Strepsiptera, but a knowledge of the transformations and a more rigid interpretation of the external anatomy have convinced nearly all systematists of the propriety of placing them as a family of Coleoptera.

They are parasitic in the bodies of species belonging to various genera of aculeate Hymenoptera; foreign genera have been discovered which infest ants and Homoptera; the comparatively large size of these parasites causes a distortion of the abdomen of the Hymenopteron affected, and, on close observation, the heads of the pupa cases may be seen emerging between the segments. The head of the pupa case of the male is convex, that of the female is flat; specimens containing male pupæ can be kept confined with proper food until the parasite is hatched.

But two genera are yet known in North America, in both of which the tarsi are 4-jointed.

Antennæ with six joints.	**Stylops.**
Antennæ with four joints.	**Xenos.**

Stylops inhabits bees of the genus Andræna; we have never met with specimens. *Xenos Peckii* lives in our common wasp *Polistes fuscata.* Stylopized individuals of *Odynerus quadricornis,* and of a large species of Sphex have been observed.

It is very desirable that observers in the United States should turn their attention to the laborious but interesting task of collecting the species of this family.

FAM. LXXIV.—RHINOMACERIDAE.

Mentum transverse, small, emarginate in front, supported on a very broad gular peduncle; ligula and palpi small.

Maxillæ exposed, lobes short, ciliate at tip, inner one very short; palpi 4-jointed, cylindrical, well developed. Mandibles flat, curved, acute, toothed on the inner side.

Antennæ inserted at the side of the beak near the end, 11-jointed, straight, first joint a little stouter than the second, but not longer, joints 2–6 nearly equal, 7 and 8 a little shorter and broader, 9–11 forming an elongate loose club, the last joint oval, pointed, divided transversely near the tip. All the joints are sparsely pilose, and those of the club are covered with sensitive surface.

Head prominent, not deflexed, eyes convex, prominent, rounded, not very finely granulated; beak as long as the prothorax, rather flat, narrowest about the middle, wider at base and tip; without antennal grooves. Labrum distinct.

Prothorax truncate before and behind, sides convex, prosternal sutures distinct, widely separated, parallel in front, then curving inwards, and attaining the coxal cavity about the middle of its outer margin; coxal cavities rounded, confluent.

Mesosternum flat, pointed behind at the middle, coxal cavities rounded, confluent; trochantin large; epimera transverse, oblique, attaining the trochantin.

Metasternum rather long, side pieces narrow, slightly dilated externally in front.

Elytra covering the pygidium, rounded at tip, without epipleuræ, and without fold on the inner surface near the side.

Abdomen with five free ventral segments nearly equal in length, separated by straight sutures, intercoxal process acute; dorsal segments coriaceous, nearly equal in length, the last more corneous, articulating with the last ventral; anal segment of ♂ convex, not very prominent; side margin of abdomen acute, but not fitting into an elytral groove.

Anterior coxæ prominent, contiguous; middle coxæ rounded, contiguous; hind coxæ transverse, slightly separated by the acute intercoxal process, and extending to the side of the abdomen.

Legs slender, not elongated, tibiæ truncate at tip, middle and hind pair with small terminal spurs; tarsi brush-like beneath, 4-jointed, third joint broad, deeply bilobed, claws divergent, simple or slightly broader at base (in our species).

This family contains a few species inhabiting the northern temperate zone, and depredating on the male flowers of coniferous trees; in which the eggs are deposited. As has been observed on a former occasion, this family is a synthetic or undifferentiated type in which the Rhynchophora make the nearest approach to the lower Heteromera; it is therefore interesting to see that it clings to a very ancient and synthetic type of vegetation.

Our species belong to two genera.

Beak flattened, broader in front of the antennæ.	**Rhinomacer.**
Beak cylindrical.	**Diodyrhynchus.**

The first genus is represented by species on each side of the continent; the second by one species in Nevada and California.

FAM. LXXV.—**RHYNCHITIDAE.**

Mentum small, subquadrate, supported upon a long narrow gular peduncle; ligula prominent, small, palpi short.

Maxillæ exposed, palpi short, rigid, as in Curculionidæ, 4-jointed.

Mandibles toothed on the outer and inner side; capable of great lateral extension; in repose the outer apical tooth on each projects forwards, so that two small acute teeth seem to project from the mouth.

Antennæ inserted at the sides of the beak, in position varying according to the genus; 11-jointed straight, first joint not elongated, and scarcely stouter, 2–8 slender, 9–11 broader, forming a loose club, and covered with sensitive surface.

Head prominent, not deflexed, eyes rounded finely granulated; beak slender, varying somewhat in form according to the genus.

Prothorax truncate before and behind, convex, prosternal sutures not visible, coxal cavities rounded, somewhat transverse, with a distinct fissure at the outer side margin: distant in Pterocolus, confluent in other genera.

Mesosternum flat, acute behind in all but Pterocolus, and with the side pieces normal in form and diagonally divided; in that genus they are transverse, prominent, apparently undivided, and ascend between the prothorax and humeral angle of the elytra, suddenly declivous and excavated in front for the protection of the legs; coxal cavities approximate, except in Pterocolus.

Metasternum rather long, with narrow side pieces; shorter with wide side pieces in Pterocolus.

Elytra separately rounded behind, exposing the pygidium in some genera; conjointly rounded, and covering the pygidium in others, epipleuræ distinct; submarginal fold on inner face short and straight.

Abdomen with five free ventral segments, nearly equal in length, separated by straight sutures, intercoxal process acute except in Pterocolus; ♂ without additional anal segment, pygidium in both sexes triangular, deflexed; sides of segments not forming an acute edge, and not fitting into a lateral groove of the elytra.

Anterior coxæ usually conical, contiguous, and prominent; smaller, rounded and separated in Pterocolus.

Middle coxæ similar to the front ones.

Hind coxæ transverse, reaching to the margin of the elytra, or nearly so.

Legs slender, rather long, tibiæ truncate at tip, with small terminal spurs; tarsi brush-like beneath, 4-jointed, third joint broad deeply bilobed; claws bifid, or acutely toothed.

Though nearly related to the preceding family, these species are readily distinguished by the absence of labrum, and the peculiar form of mandible, which recurs again only in *Desmoris*, an Erirhine genus of Curculionidæ.

While in Rhinomaceridæ a relationship to normal Coleoptera is seen in the presence of a labrum, and better development of maxillary palpi, a similar tendency is evinced in the Rhynchitidæ by the distinct epipleuræ. In the anomalous genus Pterocolus moreover, the prothorax is distinctly and acutely margined at the sides, and excavated beneath, so as to form a large cavity for the reception of the front and middle legs. This character is seen in no other Rhynchophorous insect in our fauna, and would almost warrant its reception as a distinct family. For the present, however, we prefer placing it as a sub-family.

Sub-Family I.—RHYNCHITINÆ.

The distinctive characters of this sub-family have been pointed out, but may be briefly resumed as follows:—

Body rather elongate, or pyriform, front and middle coxæ contiguous, conical, prominent. Prothorax without side margin, not excavated beneath. Mesothorax with side pieces diagonally divided, epimera not ascending. Metathorax with narrow parallel side pieces.

Our genera are as follows:—

Pygidium covered by elytra;	
Elytra punctured irregularly.	**Auletes.**
Elytra striate.	**Eugnamptus.**
Pygidium exposed, elytra with striæ of punctures.	**Rhynchites.**

Auletes and Rhynchites occur on both sides of the continent; Eugnamptus in the Atlantic region only. *R. velatus*, from Nevada, is remarkable for the male having two long pectoral spines as in many species of Centrinus.

Sub-Family II.—PTEROCOLINÆ.

A single species constitutes this sub-family. On account of the anomalous characters its place in the series of Rhynchophora has been changed from time to time, without very satisfactory results. The latest authority, Lacordaire, deceived by the broad form of body and ascending side pieces of the mesothorax, placed it in the neighborhood of Ceutorhynchus. A study of the mouth organs, as well as the antennæ, shows that it is allied to Auletes and Rhynchites, while the other differences require it to be received as a very peculiar and distinct type.

It differs from the genuine Rhynchitidæ by the antennæ inserted much nearer the eyes, which are suddenly but not deeply emarginate in front. The side margin of the prothorax is acute and well defined, and the under surface, with the anterior part of the mesothorax, is excavated, forming a large cavity for the reception of the front and middle legs. The elytra are sculptured with wide shallow grooves, which are confusedly punctured; the epipleuræ are distinct; the tips are widely dehiscent and separately rounded, exposing parts of three dorsal segments, all corneous and densely punctured. Front and middle coxæ small, rounded, widely separated, not prominent; posterior coxæ separated, transverse, intercoxal process broad. Tibiæ with two distinct apical spurs, tarsi dilated, claws appendiculate. Ventral segments short; pygidium less convex in the ♂, and strongly inflexed.

Side pieces of mesosternum transverse, solid, ascending between the prothorax and elytra. Side pieces of metasternum wide.

Pterocolus ovatus is found in the Atlantic region from Michigan and Massachusetts to Florida. It is easily known by its robust form and beautiful blue color.

FAM. LXXVI.—**ATTELABIDAE.**

Mentum very transverse, short, trilobed, supported on a very large quadrate gular peduncle; ligula and palpi small.

Maxillæ exposed, lobes small, palpi rigid, 4-jointed.

Mandibles flat, pincer-shaped, rather stout, toothed on the inner side.

Antennæ inserted rather on the upper surface than at the sides, straight, 11-jointed; first and second joints stouter, 9–11 larger forming a loose elongate club covered with sensitive surface.

Head prominent, not deflexed, eyes oval, finely granulated, not prominent; beak short and stout, thicker at the end beyond the insertion of the antennæ; antennal grooves short and broad.

Prothorax truncate before and behind, convex; prosternal sutures not distinct, coxal cavities confluent, rounded.

Mesosternum flat, declivous, triangular, pointed behind; side pieces short transverse, diagonally divided, epimera not attaining the coxæ.

Metasternum short, side pieces wide.

Elytra not covering the pygidium, separately rounded at tip; epipleuræ narrow but distinct; inner surface without lateral fold.

Abdomen with five short ventral segments separated by deeply impressed straight sutures, intercoxal process acute; fifth at the middle very short, being compressed by the inflexion of the pygidium; side margin not acute nor extended upwards. Dorsal segments convex, almost corneous. Pygidium small corneous, upper margin with a large deep marginal groove.

Anterior coxæ conical, prominent, contiguous; middle coxæ somewhat transverse, and a little prominent; hind coxæ transverse, nearly contiguous.

Legs stout, tibiæ serrate on the inner side, armed at the tip with two strong hooks, which represent the spurs in the two preceding families; tarsi dilated, brush-like beneath; third joint deeply bilobed; claws connate at base.

A family containing but few genera, with less than 200 species, distributed mostly in the tropics.

Five species of Attelabus occur in our fauna; four in the Atlantic States, and one in New Mexico.

FAM. LXXVII.—**BYRSOPIDAE.**

Mentum moderate in size, trapezoidal, wider in front, concave in our species; gular peduncle very small; ligula and palpi small.

Maxillæ exposed, small, palpi very short.

Mandibles stout and short, pincer-shaped, without apical scar.

Antennæ short, inserted in front of the eyes, sub-geniculate; scape short, funicle 7-jointed, the last joint wider, forming part of the club in Thecesternus, club annulated, oval, pointed, and covered with sensitive surface.

Head strongly deflexed, beak short, stout, not emarginate at tip, separated from the head beneath by a strong gular constriction, for the reception of the antennæ. Eyes transverse narrowed beneath.

Prothorax rounded in front, deeply excavated beneath for the reception of the head and beak, coxal cavities small, confluent; prosternum visible in Thecesternus as a triangular plate in front of the coxæ.

Meso- and metasternum very short, side pieces of the latter not separate.

Elytra connate, covering the pygidium.

Abdomen with the first and second ventral segments very large, connate, the suture effaced at the middle; third and fourth short, fifth as long as third and fourth united; sutures straight, very deeply impressed; intercoxal process broad. Anal segment of ♂ small, rounded at tip.

Anterior coxæ small, contiguous, rounded somewhat prominent; middle coxæ separated, small, rounded; hind coxæ small, oval, widely separated, distant from the side of the elytra.

Legs slender; tibiæ sinuate on inner side, truncate at tip, and armed on the inner side with two small terminal anchylosed spurs. Tarsi 4-jointed, narrow, joints cylindrical, setose or spinose beneath. Third joint not at all dilated or bilobed in Thecesternus. Claws slender, simple, separate.

This family contains but a small number of genera, all confined to the Eastern continent, except *Thecesternus* which is restricted to the interior parts of the United States, extending into Texas and eastward to Illinois. It forms a tribe distinguished from other Byrsopidæ by the peculiar conformation of the prosternum, which forms a triangular plate in front of the coxæ. It is mostly epigæal in its habits, but has been found attacking grape-vines and hickory.

FAM. LXXVIII.—**OTIORHYNCHIDAE.**

Mentum variable, sometimes large, filling the gular emargination and without peduncle, or small exposing the maxillæ and ligula and with distinct peduncle.

Labial palpi very rarely visible and then very short, 3-jointed.

Maxillæ usually concealed, the palpi short and rigid, 4-jointed.

Mandibles short, stout, pincer-like, very rarely slightly scissor-like, and in one instance (Dirotognathus) slightly laminiform and prominent. Anterior face with a distinct scar frequently borne at the tip of a slight process.

Antennæ inserted at the sides or top of rostrum always in front of middle and usually near the tip, geniculate, 11-jointed (except in Agraphus), the last three forming a compact club with distinct evidences of the sutures.

Head moderately prominent, rarely (Agasphærops) deeply inserted; beak variable, never long and slender. Scrobes well defined, except in Otiorhynchini, and receiving the first joint (scape) of the antennæ in repose.

Prothorax of variable form, apex usually truncate; rarely slightly prolonged over the head, base truncate, arcuate or bisinuate, post-ocular margin either truncate or with ocular lobe more or less developed, sometimes with stiff fimbriæ. Anterior coxæ contiguous (except in Pandeletejus).

Mesosternum short, oblique or horizontal, rarely (Coleocerus) protuberant; middle coxæ narrowly separated; side pieces variable, never attaining the coxal cavity.

Metasternum variable, short in Division I, usually long in Division II.

Elytra concealing the abdomen entirely from above, without trace of epipleuræ, but with inflexed fold on their inner side.

Abdomen with five ventral segments, the first two connate, the others free. Intercoxal process variable.

Legs moderate; femora very rarely decidedly clavate; tibiæ straight or feebly arcuate, usually mucronate at tip and rarely with small spur-like processes (certain *Otiorhynchini*). Claws fixed or movable, always simple, never toothed.

The males of all the species have the pygidium divided, so that there are eight dorsal segments, while in the female there are but seven.

This family contains all those genera in which the mandibles are provided in the pupa stage with a deciduous piece of varying form, usually elongate and slender, sometimes falcate and acute, or short and conical. In the early life of the imago these pieces are lost (although specimens occur in which one, sometimes both are preserved), and the place of their attachment is indicated by a scar which is usually on the face of the mandible but frequently borne at the tip of a process of varying length. The form of the mandible itself, without reference to the scar, indicates the occurrence of the deciduous piece. When the mandibles are acute at tip and one overlaps the other by an edge more or less acute, no deciduous piece will be found. Its occurrence may generally be expected in those in which the mandibles meet with a broad surface and whose function is rather that of crushing than cutting.

The family Otiorhynchidæ as defined by Dr. LeConte (American Naturalist, 1874, p. 396), has but little to do with the tribe of the same name as restricted by Lacordaire (Genera vi. pp. 20 and 144), as it includes not only the greater portion of the Adelognathes, but also several tribes of Phanerognathes in the system of the latter author.

In examining the under side of the body two forms of construction are found, by means of which this large family may be divided into two primary sections.

First. Side pieces of mesosternum very unequal, the episternum larger and attaining the elytral margin, epimeron usually small, sometimes very small. Metasternal side pieces never very wide, generally very narrow or entirely concealed by the elytral margin, anterior end never broadly dilated on both sides.

Second. Side pieces of mesosternum diagonally divided and equal or very nearly so, episternum distant from the elytral margin, separated by the epimeron. Metasternal side piece moderately wide, dilated at its anterior end with an acute process of greater or less extent projecting inwards between the mesosternal epimeron and the body of the metasternum.

DIVISION I.

This division contains those genera in which the mesosternal epimera are small, or at most moderate, the episterna in contact with the elytral margin, the metasternal side pieces rarely of more than moderate width and not dilated at anterior end, and without the triangular process projecting between the mes-epimera and the metasternum. The other characters of the division are extremely variable, in all, however, the antennæ are strongly geniculate. All the genera of this Division in our fauna have a large mentum concealing entirely the maxillæ, excepting in the last tribe.

The following tribes are represented in our fauna:—

Thorax without ocular lobes;
  Antennal grooves (scrobes) lateral directed inferiorly. Brachyderini.
  Antennal grooves short, superior, rarely lateral, and then directed toward the eyes. Otiorhynchini.
Thorax with ocular lobes more or less distinct;
  Mentum at least moderate, concealing in great part or entirely the maxillæ; mandibles robust not prominent, scar very evident. Ophryastini.
  Mentum very small, maxillæ exposed, mandibles prominent, free edge rather thin, scar small, very narrow Dirotognathini.

As will be seen by the above table the presence or absence of ocular lobes affords the only means of separating the tribes *Brachyderini* and *Ophryastini*, and the character must be strictly interpreted. The latter tribe has the ocular lobes sometimes very feeble and almost wanting, but as the lobes disappear the fimbriæ become more evident. In the former tribe there are no evidences whatever of either ocular lobes or fimbriæ. In one genus, the prosternum is more emarginate than usual, giving an appearance of slight ocular lobes, but no traces whatever of fimbriæ are seen. In some of the genera of *Ophryastini*, the metasternal side pieces become of moderate width, showing somewhat of an approximation to the genera of the second division. The side pieces in the other two tribes are very narrow and the sutures nearly always obliterated.

Tribe I.—**BRACHYDERINI.**

Rostrum at least as long as the head and slightly dilated at tip, which is more or less emarginate. Front flat, rarely with a slight depression between the eyes. Scrobes moderately deep, usually distinctly limited and very oblique. Antennæ moderate, scape attaining the eyes rarely (Trigonoscuta) passing them. Thorax without ocular lobes or fimbriæ and not or very feebly emarginate beneath. Scutellum usually distinct. Elytra oval, not wider than the thorax. Mesosternal epimeron small, episternum attaining the elytra. Episternum of metasternum narrow, suture usually distinct in its entire length. Abdomen with the first two segments (except in Gr. iv.), separated by an arcuate suture, segments 3–4 short, conjointly not or but little longer than the second.

As thus constituted, the tribe is widely different from that defined by Lacordaire under the same name. From it those genera have been removed in which the mesosternal side pieces are diagonally divided and the metasternal episterna moderately wide and dilated in front. These form tribes in the next division. It is, however, extremely difficult to fix tribal limits with any degree of certainty, as every character upon which classification has been based, exhibits a degree of variability almost unparalleled in any other series of Coleoptera. The ocular lobes of the thorax especially exhibit this tendency, and the pointed outline of the eye which usually accompanies the lobe is by no means in better condition. The eye may be more nearly circular in outline with a lobe than it is without the lobe.

As thus constituted, the tribe contains the following groups:—

- Third joint of all the tarsi wider than the second and deeply bilobed;
  - Tibiæ normal, not dilated at tip; scape not passing the eyes;
    - Posterior coxæ small, very widely separated. MINYOMERI.
    - Posterior coxæ normal, intercoxal process triangular or oval;
    - Antennæ scaly, body beneath densely scaly; elytra emarginate at base, thorax closely applied. EPICÆRI.
    - Antennæ shining, sparsely hairy, body beneath nearly naked;
      - Tips of hind tibiæ feebly cavernous, a double row of spinules; first ventral suture arcuate. BARYNOTI.
      - Tips of hind tibiæ open, a single row of spinules;
        - First ventral suture straight or nearly so; claws free. HORMORI.
        - First ventral suture sinuous; claws connate. BRACHYDERES.

Anterior tibiæ dilated at tip; scape long, passing the eyes. TRIGONOSCUTÆ.

Third joint of tarsi not wider than second, and feebly emarginate. CALYPTILLI.

Group I.—**Minyomeri.**

Rostrum stout, cylindrical, as long as the head, and very little narrowed to the tip. Scrobes deep, well defined, suddenly arcuate in front, gradually wider behind and passing beneath the eyes. Mesosternal side pieces unequal. Metasternal episternum linear, suture distinct. Intercoxal process very broad and very short. Hind coxæ very small. Corbels of hind tibiæ open, tarsal claws free.

The form of the head, rostrum, and scrobes resembles somewhat that of Pandeletejus of the Second Division, but the structure of the sternal side pieces excludes the present genus from any such association. According to the system adopted by Lacordaire, this genus would be placed in the *Brachyderides vrais.*

Two species of Minyomerus are found in Colorado and Arizona, the latter one extending to California.

Group II.—**Epicæri.**

The species composing this group are more or less pyriform, the body above and beneath densely scaly, the elytra of a pale-brownish or luteous color with the tip and two sinuous bands much paler. The rostrum is rather stout, usually longer than the head, the scrobes deep, well defined, and rapidly descending. The supports of the deciduous pieces of the mandibles are moderately or very prominent.

The genera known to occur in our fauna may be recognized by the following table:—

Articular face of hind tibiæ glabrous, support of deciduous piece moderately prominent;
  Antennæ stout, last joint of funicle short broad, and very close to the club; joints 1–2 of tarsi glabrous. **Graphorhinus.**
  Antennæ more slender, joints of funicle conical, the last distant from the club; tarsi pubescent. **Epicærus.**
Articular face of hind tibiæ scaly; support of deciduous piece very prominent; antennæ rather slender, club distinct. **Anomadus.**

The deciduous pieces of the mandibles in Epicærus are falciform, moderately robust, obtusely pointed, with the upper inner side concave, smooth, and shining.

Graphorhinus and Epicærus occur in the Southern and Western States; Anomadus in Lower California.

Group III.—**Barynoti.**

Rostrum moderately stout, longer, and slightly narrower than the head, sub-cylindrical, slightly dilated at tip which is slightly notched, upper side finely sulcate. Scrobes deep, slightly arcuate passing immediately beneath the eyes, which are large, oval, and slightly oblique. Scape slightly clavate, attaining the middle of the eye, surface glabrous and slightly ciliate; funicle 7-jointed, joints 1–2 longer, joint 3 conical, 4–7 rounded, club elongate oval. Thorax subquadrate, slightly narrower in front, apex truncate, base slightly arcuate. Scutellum small. Elytra moderately oval, convex, base broadly emarginate and slightly wider than the thorax, humeral angles distinct in front. Thighs moderately clavate, anterior tibiæ slightly arcuate, middle and posterior slightly dilated at tip, all slightly mucronate. Hind tibiæ with a double row of fimbriæ surrounding an oval smooth space (*corbeilles caverneuses*). Tarsi moderately dilated, pubescent beneath, claws free.

Barynotus Schönherri, a European species, has been taken in Newfoundland.

Group IV.—**Hormori.**

Rostrum longer and narrower than the head, subcylindrical at base, broader at tip, alæ moderately divergent, apex emarginate and with a V-shaped elevated line, median line distinctly impressed. Scrobes deep in front, and moderately arcuate, posteriorly feebly marked and directed beneath (Hormorus) or toward the lower border of the eye (Agasphærops). Antennæ moderately long, attaining the middle of the eye in the former and barely reaching the eye in the latter. Eyes moderately or very prominent. Metasternal side pieces almost entirely concealed by the elytra; metasternum short. Intercoxal process broad, truncate, second abdominal segment but little longer than the third and separated from the first by a straight suture. Corbels of hind tibiæ open, claws of tarsi free.

The supports of the deciduous pieces of the mandibles are very prominent, obliquely truncate and pointed at tip; the deciduous pieces do not exist on any of the specimens before us. The open posterior corbels and the straight first abdominal suture would seem to place here the two genera included in Lacordaire's *Blosyrides*, with which, however, they have but little in common.

Two genera are thus separated:—

Scape attaining the middle of the eyes, the latter moderately prominent, without posterior orbit. **Hormorus.**

Scape barely attaining the anterior margin of the eye, the latter spherical, prominent, and with posterior orbit. **Agasphærops.**

These two genera have the elytra at base feebly emarginate and somewhat broader than the thorax, the humeri being broadly rounded in the latter and subrectangular in the former genus. There is also a close superficial resemblance to Otiorhynchus, especially in the second, where the surface is black and with few and inconspicuous scales. Hormorus is however more ornate.

One species of Hormorus from the Atlantic, and one Agasphærops from California represent this group.

Group V.—**Brachyderes.**

Rostrum stout, subquadrangular, very little longer than the head, slightly narrower in front. Scrobes moderately deep, suddenly arcuate, passing toward the lower margin of the eye but not beneath it. Intercoxal process broad, oval at tip. Corbels of posterior tibiæ open. First ventral suture sinuous. Tarsal claws connate, nearly to their tips.

In this group the antennæ are more slender, and the scape, especially, longer than is seen in any other groups of the tribe. One species occurs in our fauna, introduced from Europe, *Brachyderus incanus*, an elongate species (36 mm) piceous, feebly clothed with scale-like hairs. It has occurred at St. Louis.

Group VI.—**Trigonoscutæ.**

Anterior tibiæ with the outer apical angle prolonged. Articular surfaces of hind tibiæ strongly cavernous and scaly.

The supports of the deciduous pieces are not prominent. These pieces are rather long, very feebly arcuate, and obtuse at tip. The generic description given by Motschulsky is so extremely vague and short as to be entirely valueless, and in strict justice the genus should be credited to Lacordaire.

Trigonoscuta pilosa, the only representative of this group, is not rare on the sea-coast of California.

Group VII.—**Calyptilli.**

Rostrum not longer than the head, subquadrangular, very slightly narrowed toward the tip and but little narrower than the head. Eyes round, coarsely granulated, and almost entirely concealed from above by a small tubercle. Scrobes lateral, arcuate, deep. Thorax without ocular lobes or fimbriæ. Scutellum very indistinct. Mesosternal side pieces very unequal. Metasternum short, side pieces moderate, suture obliterated. Abdomen normal, intercoxal process broad truncate in front. Tarsi with coarse spinous hairs beneath, third joint not wider than the second and feebly emarginate, last joint moderately long, claws free. Anterior tibiæ feebly mucronate and digitate at tip with four or five coarse spinules, articular cavities of hind tibiæ cavernous.

The gular emargination is moderately large and without submental peduncle. The mentum is nearly semicircular in shape and partially exposes the other oral organs, the maxillæ being slightly visible at the sides and the ligula at tip.

The combination of characters above given will be found very difficult to place in any tribe of Lacordaire's system. The genus cannot be called *Phanerognath*, as the mentum conceals the greater portion of the oral organs, and it appears equally misplaced in the *Adelognath* series.

The occurrence of narrow tarsi in this portion of the series is certainly a remarkable circumstance and serves to illustrate the almost utter impossibility of dividing any portion of the Rhynchophorus sub-order without apparently doing violence to some important character. As the present is the first occurrence of this character, it might be here observed that two others always accompany it (in our fauna) viz.: The approximation of the last joint of the funicle to the club and the tarsi more or less spinous beneath. Ophryastes, Rhigopsis, and Cimbocera, the only genera of Otiorhynchidæ in our fauna with narrow tarsi, all have the other two characters. The tarsi may, however, be more or less spinous in other genera, but the antennal character never occurs without narrow tarsi.

Calyptillus cryptops, from New Mexico, is the only species of the group known to us.

Tribe II.—OPHRYASTINI.

Rostrum moderately or very robust, quadrangular or subcylindrical. Mandibles robust, never prominent or laminiform at tip, scar round, very distinct and sometimes prominent. Mentum large or at least moderate, concealing in great part the other oral organs, sub-mentum rarely feebly pedunculate. Scrobes lateral, rarely (Phyxelis) visible from above, directed either toward the middle of the eyes or inferiorly. Antennæ moderate, scape always attaining at least the eye, funicle 7-jointed, the last usually free, rarely (Cimbocera and Ophryastes) contiguous to the mass. Thorax always with distinct ocular lobes which are frequently fimbriate. Metasternum usually very short, side pieces usually narrow, suture nearly always visible. Mesosternal side pieces unequally divided, episternum and elytral margin contiguous. Intercoxal process at least moderately, sometimes very broad (Rhigopsis). Abdomen variable, second segment longer than the two following united (except in Ophryastes), and with the first suture arcuate (except in Ophryastes and some Strangaliodes). Tarsi variable, usually pubescent beneath, sometimes spinous; third joint usually deeply bilobed and broader, rarely simply emarginate and not wider than the second (certain Ophryastes, and in Cimbocera and Rhigopsis). Claws always free. Body always apterous.

The genera of the tribe form the following groups:—

Rostrum robust, quadrangular, more or less distinctly trisulcate above;
  Scrobes rapidly inferior, well defined; eyes always narrow and acute below, partially concealed by the ocular lobes;
  Abdomen with second segment rarely as long as the two following together, first suture straight; intercoxal process moderately wide. OPHRYASTES.
  Abdomen with second segment longer than the two following together, first suture strongly arcuate; intercoxal process very broad. RHIGOPSES.
Rostrum less robust, subcylindrical, never sulcate above; scrobes feebly inferior, usually directed toward the eyes or visible from above and badly defined; eyes oval, not acute below and usually entirely free;
  Scrobes entirely lateral. STRANGALIODES.
  Scrobes visible from above. PHYXELES.

Group I.—**Ophryastes.**

Rostrum robust, angular, more or less distinctly trisulcate, tip feebly emarginate with a small triangular smooth space. Antennæ moderately robust, scaly, scape gradually thicker, nearly attaining the eyes, funicle 7-jointed, the last joint contiguous to the club which is oval. Scrobes deep, passing obliquely downwards in front of the eyes. Eyes oval, transverse, pointed beneath. Thorax variable in form, either oval or transverse, and with callosities at the sides. Elytra oval or oblong. Scutellum wanting. Abdominal sutures straight, second segment equal to, or very little longer than the third. Tibiæ not mucronate at tip. Tarsi variable. Claws free.

The articular surfaces at the tips of the hind tibiæ are very nearly terminal and in great part scaly. Lacordaire calls them "*caverneuses*," but without reason (for the majority of our species). They are cavernous in some *Eupagoderes*. The mesosternal side pieces are very unequal, the epimeron being very small. The metathoracic episternum is moderately broad and the suture more or less distinct. In all the species the ocular lobes are of moderate size and fimbriate. The surface of the body is densely scaly and without any pubescence.

Two genera appear to be indicated in our fauna:—

Tarsi slender, third joint not wider than second, and simply emarginate; sides of thorax with tuberosities more or less marked; tips of tarsal joints beneath spiniform. **Ophryastes.**

Tarsi dilated, third joint usually wider than the second and deeply bilobed; thorax oval without tuberosities, tarsi beneath not spinous at tip. **Eupagoderes.**

In the first genus the elytra are broadly oval, in the second elongate oval. In the latter also, the legs are longer.

The species occur from Kansas to eastern California, and Lower California.

Group II.—**Rhigopses.**

Rostrum quadrangular, broader in front, deeply sulcate above. Eyes narrow, acute beneath. Tarsi not dilated, beneath spinulose, third joint emarginate, but not broader than the second. Corbels of hind tibiæ feebly cavernous. Posterior coxæ very widely distant. Intercoxal process broad, truncate, second abdominal segment much longer than the two following united, separated from the first by a strongly arcuate suture. Metasternal side pieces connate with the metasternum without evidence of sutures. Seventh joint of the funicle of the antennæ very close to the club.

The form and vestiture of the tarsi separate this group from the Strangaliodes and the structure of the abdomen from the Ophryastes. The rostrum and the scrobes are not unlike those of Ophryastes.

Rhigopsis effracta, on Yucca, in Southern California, is the only species known to us.

Group III.—**Strangaliodes.**

The group, as comprised in the following table, is not precisely that intended by Lacordaire. There are without doubt several genera which should be placed in his *Eremnides*, but with the exception of Phyxelis we can find no genus presenting such marked differences in the form of the scrobes as to render it possible to draw the line with any degree of accuracy between those genera in which the scrobes are strictly lateral and those with the scrobes arcuate and directed inferiorly.

The arrangement of the genera in the following table exhibits a gradual transition in the form and length of the rostrum, from Dichoxenus which approaches most nearly Ophryástes in this respect as well as in the structure of the scróbes and abdomen, to Phymatinus with a long rostrum almost entirely lateral scrobes and normal abdomen. Cimbocera by its narrower tarsi and the structure of the antennæ approaches Ophryastes in another direction. Melamomphus resembles Amomphus in form.

The following table is the result of a study in which the serial arrangement exhibits—

First, a gradual transition in the form of the rostrum, from the more robust to the elongate.

Second, the tendency of the scrobes to change from the strongly arcuate to the nearly straight and shallow form.

Third, the structure of the abdomen, with the three intermediate segments nearly equal (as in Ophryastes) to those with the abdomen of normal structure.

First suture of abdomen straight; second segment rarely as long as, never longer than the two following united; hind tibiæ usually mutic;

Scrobes deep, well defined, at least moderately arcuate, passing inferiorly;
  Scrobes strongly arcuate, passing beneath at a distance from the eyes. **Dichoxenus.**
  Scrobes moderately arcuate, passing immediately beneath the eye. **Anametis.**
Scrobes evanescent posteriorly, badly defined, nearly straight, directed toward the lower angle of the eye;
  Metasternal side pieces rather wide, suture distinct;
    Hind tibiæ distinctly mucronate; corbels cavernous. **Melamomphus.**
    Hind tibiæ not mucronate; corbels open. **Dyslobus.**
  Metasternal side pieces indistinct, suture obliterated;
    Hind tibiæ not mucronate; corbels open. **Panscopus.**

First suture of abdomen arcuate; second segment as long as, and frequently longer than the two following united;
  Seventh joint of funicle distant from the club; third joint of tarsi broader than the second, tarsi densely pubescent beneath;
    Hind tibiæ not mucronate;
      Scrobes strongly arcuate, moderately deep; passing rapidly beneath at a distance from the eyes;
        Support of deciduous piece of mandible not prominent;
          Anterior tibiæ denticulate within; surface of body scaly without hairs; corbels of hind tibiæ open. **Orimodema.**
          Anterior tibiæ not denticulate; surface scaly and hairy; corbels subcavernous. **Mimetes.**
        Support of deciduous piece prominent; anterior tibiæ not denticulate; surface scaly and with erect hairs;
          Corbels of hind tibiæ cavernous; humeri entirely obliterated. **Diamimus.**
          Corbels of hind tibiæ open; humeri rectangular. **Peritaxia.**
      Scrobes very feebly arcuate, evanescent posteriorly, directed toward the lower angle of the eye, and short. **Thricomigus.**
    Hind tibiæ distinctly, usually rather strongly mucronate. Rostrum longer and narrower than the head and more or less auriculate;
      Front convex, separated from the rostrum by a transverse impression; side pieces of metasternum distinct, suture entire. **Amnesia.**
      Front flat, rostrum continuous on the same plane and usually flattened above; side pieces of metasternum indistinct, suture in great part obliterated;
        Body above finely tuberculate, scales large. **Phymatinus.**
        Body not tuberculate, scales small and denser. **Nocheles.**
  Seventh joint of funicle contiguous to the club, third joint of tarsi feebly emarginate, scarcely broader than the preceding; tarsi sparsely setose beneath. **Cimbocera.**

Except Dichoxenus (Texas), Panscopus (northern Atlantic States), Anametis (Atlantic region), Orimodema (Colorado), Diamimus (Colorado), Peritaxia (Colorado), Thricomigus (Colorado), Cimbocera (Dakota), these species belong to the Pacific slope.

Group IV.—**Phyxeles.**

Rostrum slightly narrower than the head, alæ not prominent. Scrobes superior, badly defined, feebly arcuate, rapidly evanescent posteriorly and not attaining the eyes. Second segment of the abdomen longer than the two following united, separated from the first by a straight* suture.

The validity of the separation of this as a distinct group in our fauna seems somewhat doubtful, the only character by means of which it may be distinguished from the preceding group is found in the position of the scrobes. We have adopted a group name in accordance with the only genus known to us, as experience has already shown that groups of genera formed on the Lacordairean basis are not at all times equivalent to those adopted in the present memoir which is but a modification and amplification of the system suggested by Dr. LeConte.

One genus and species, *Phyxelis rigidus*, occurs in the Atlantic States.

Tribe III.—OTIORHYNCHINI.

Antennæ long, scape always passing the eyes behind Scrobes variable but never at the same time linear and directed inferiorly. Metasternal side pieces usually entirely concealed by the elytra, rarely of moderate width. Mesosternal epimera small. Elytral striæ entire in all our genera, tenth or marginal always distant from the preceding in its entire length.

It is extremely difficult to give characters which define tribes of Rhynchophora with any degree of certainty, and it is frequently found that a species can only be assigned a position by the consideration of almost its entire structure with great allowance for facies, and not a little, by the experience of the student.

Some of the genera placed in the Otiorhynchini by Lacordaire, have been removed and will constitute portions of tribes in Division II. with wide metasternal side pieces.

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* Lacordaire says arcuate. It really appears so when the scales and crust remain, but when these are removed the suture will be found as stated.

Our genera form four groups which may be distinguished as follows:—

Funicle 6-jointed; articular surface of hind tibiæ inclosed, tips of hind tibiæ truncate with broad oval space. AGRAPHI.

Funicle 7-jointed; articular surface free, tips of hind tibiæ with a single row of fimbriæ;

Claws free;

Antennæ long; outer joints of funicle long. OTIORHYNCHI.

Antennæ shorter; outer joints short or moniliform. TRACHYPHLŒI.

Claws connate;

Antennæ as in *Otiorhynchi*. PERITELI.

The Periteli should follow the Otiorhynchi from their greater similarity of form and structure, the only difference between the two groups is found in the form of the claws.

Group I.—**Agraphi.**

Antennæ moderate, scape longer than the funicle and club, moderately arcuate; funicle 6-jointed; club broadly oval slightly flattened, composed in great part of the first joint only, the other joints retracted and very indistinct. Tarsi long, slender, third joint very feebly emarginate and scarcely wider than the second. Hind tibiæ truncate at tip with broad, oval smooth space, cotyloid cavities internal. Anterior tibiæ with outer apical angle slightly prolonged; anterior and middle tibiæ with inner angle mucronate.

The above characters appear to warrant the separation of Agraphus as a group by itself, as suggested by Lacordaire, who, however, failed to notice the structure of the antennal club and placed the genus in a group in which the cotyloid cavities of hind tibiæ are open. These latter are really very strongly cavernous, more so in fact than in any other genus in our fauna.

Agraphus bellicus alone constitutes this group, and is found in the Atlantic States.

Group II.—**Otiorhynchi.**

Antennæ long, rather slender, scape passing slightly the anterior margin of the thorax, funicle 7-jointed, first two joints longer than the others, joints 3–7 obconical, moderately long, club oval, acute at tip. Cotyloid cavities of hind tibiæ terminal. Tarsal claws free.

The longer antennæ as defined by the form of the outer joints of the funicle, alone distinguish this group from the next. The genera are not numerous and are known by the characters given in the following table:—

Metasternal side pieces entirely concealed by the elytra; suture obliterated; hind tibiæ with two short fixed spurs. **Otiorhynchus.**

Metasternal side pieces linear; suture distinct in its entire length;
  Hind tibiæ with two short, fixed, terminal spurs, first suture of abdomen feebly arcuate; front slightly transversely impressed. **Sciopithes**
  Hind tibiæ without terminal spurs, first suture strongly arcuate at middle; front not impressed. **Agronus.**

Metasternal side pieces moderately wide, suture distinct;
  Hind tibiæ without terminal spurs; first suture of abdomen strongly arcuate at middle. **Neoptochus.**

The fixed spurs of the hind tibiæ appear not to have been noticed by any author; they are, in fact, difficult to see in some species, while in others, quite large and prominent (*O maurus*,. We are not at present aware of the occurrence outside of the tribe Otiorhynchini of any similar structure except in the female of Ithycerus in which on each tibia in addition to the usual mucro are two spurs, one of which at least is movable. The male has the tibiæ simply mucronate.

Otiorhynchus contains five species in our fauna known also in Europe; Neoptochus one species in Florida; the other two genera occur in California.

Group III.—**Peritell.**

Antennæ long, scape attaining or slightly passing the anterior margin of the thorax; funicle variable in length, 7-jointed; club oval. Tarsal claws connate.

The cotyloid surfaces of the hind tibiæ are entirely open in all the genera of this group, glabrous in six, scaly in the remainder. In the genera in our fauna the rostrum is comparatively or very short, nothing occurs at all approximating the length of that of *Peritelus griseus* of Europe. The alæ of the rostrum are divergent in but one genus, and then but feebly.

Our genera are as follows:—

First ventral suture straight; scrobes lateral;
  Alæ of rostrum slightly divergent; first two joints of funicle equal. **Paraptochus.**

First ventral suture arcuate;
  Cotyloid surface of hind tibiæ glabrous; eyes without orbital groove;
    Hind coxal cavities open externally; first abdominal segment behind them very short. **Mylacus.**
    Hind coxal cavities closed externally; first abdominal segment normal;
      Scrobes superior and convergent above;
        Rostrum longer than the head, scrobes very short terminal; body with scales and setæ. **Thricolepis.**
        Rostrum short; scrobes nearly attaining the eyes; body scaly only. **Peritelopsis.**
      Scrobes more lateral, not converging above;
        Scape as long (or very nearly so) as the funicle; tibiæ finely denticulate within. **Geoderces.**
        Scape much shorter than the funicle; tibiæ not denticulate. **Aragnomus.**
  Cotyloid surface of hind tibiæ densely scaly;
    Scrobes superior, slightly convergent above;
      Eyes indistinctly surrounded by a groove; scape feebly arcuate. **Dysticheus.**
    Scrobes lateral, not at all convergent; orbital groove deep;
      Scape arcuate and slightly twisted; scrobes lateral, deep, and attaining the eyes. **Eucyllus.**
      Scape straight or very feebly arcuate;
        Scrobes very shallow posteriorly, not attaining the eyes. **Thinoxenus.**
        Scrobes deep, attaining the eyes. **Rhypodes.**

The genera above indicated are so arranged as to exhibit a gradual transition from the Ptochoid forms of the preceding group to the Trachyphlœoid forms of the next. The rostrum tends to become shorter, also, as the advance is made from the first to the last genus. The vestiture varies. In one species, *Mylacus saccatus* Lec., the surface is sparsely pubescent without scales, *Peritelopsis globiventris* Lec. is scaly only without trace of hairs or setæ; all the remaining species are densely scaly and with short erect setæ. As a general rule the metasternal side pieces are extremely narrow in the earlier genera (entirely concealed posteriorly in Mylacus) and become more distinctly wider in the later genera, the suture, however, is so very indistinct as to make it almost impossible to use the character systematically.

The scrobes vary greatly in form. In several genera they are plainly superior and rather short, converging above. In others it is not easy to determine whether to call them lateral or superior. When the scrobes are much more distinctly open when viewed from above than when seen from the sides, they are called superior and conversely. None of our genera show a lateral form of scrobe such as seen in Omias or Lichenophagus.

The occurrence of short fixed spurs to the hind tibiæ in addition to the mucro, and at all events entirely independently of it, is noticed here. In one genus their occurrence appears to be sexual, in others it cannot be so referred.

The occurrence of scaly tips to the hind tibiæ does not appear, from descriptions, in any foreign genus of the group. Those in our fauna might form a distinct group from the Periteli, and would have been so constituted, were it not that Lichenophagus occupies an intermediate place by the groove surrounding the eyes and by the entirely glabrous tips of the hind tibiæ. It is also to be regretted that one of our species only appears to be congeneric with any previously described.

With the exception of one Geoderces from Canada, and one Rhypodes from Colorado, the species of the preceding genera belong to the Pacific fauna.

Group IV.—**Trachyphlœi.**

Antennæ moderate, scape attaining at most the margin of the thorax, usually the posterior margin of the eyes; funicle 7-jointed, joints 1–2 longer than the others, joints 3–7 moniliform; club short, oval. Claws free.

Although composed of species differing considerably in their general aspect from those of the preceding group, no sharply-defined characters are found by which to distinguish the two. The antennæ are always less elongate, the scape long, feebly arcuate and slightly thicker to the tip, attains the thorax; the funicle not longer than the scape, has the outer joints short, round, and moniliform.

The following genera occur in our fauna:—

Metathoracic side pieces entirely concealed; eyes with distinct orbital groove;
  Scrobes superior, very short and deep, not reaching the eyes; anterior and middle tibiæ feebly mucronate. **Cercopeus.**
  Scrobes lateral, long, passing directly backwards and including the eyes; tibiæ strongly mucronate. **Chætechus.**
Metathoracic side pieces visible; suture at least moderately distinct;
  Eyes with distinct orbital groove; rostrum deeply transversely impressed at base. **Trachyphlœus.**

he species, one of each genus, occur in the Atlantic States.

Tribe IV.—**DIROTOGNATHINI.**

Rostrum longer than the head, slightly flattened. Mandibles rather prominent. Mentum very small, trapezoidal, not retracted, maxillæ and ligula entirely exposed. Thorax with feeble ocular lobes. Metasternal side pieces narrow connate with the sternum, with very slight traces of suture.

These few characters serve to distinguish this tribe as represented in our fauna, to which may be added: Mandibles prominent, laminiform at tip, inner edge strongly bidentate, outer edge arcuate, with a groove and a scar-like space near the base, apex truncate, scar terminal, small, very narrow and transverse, deciduous pieces short, broader at tip and obliquely truncate. Mentum very small, supported by a distinct peduncle which is rather short. Metasternum rather short.

We are entirely unable to place this tribe in or near any of those indicated by Lacordaire, further than to state that it is *Phanerognath Synmeride* and belongs to the first section of the latter Phalanx.

One species, *Dirotognathus sordidus*, occurs in California and Arizona.

DIVISION II.

In this division are contained all those genera in which the mesosternal side pieces are diagonally divided into two nearly equal pieces, the outer of which (epimeron) cuts off the inner (episternum) from any contact with the elytral margin. The metasternal episternum is usually moderately broad, the suture distinct in its entire length, rarely narrow, and in one genus the suture is entirely obliterated. In every case, however, the anterior end of the metasternal episternum is suddenly dilated, causing on one side an emargination of the elytral margin (which is, however, evanescent), while on the inner side an acute triangular process of varying length occupies a space between the mesosternal epimeron and the body of the metasternum.

The antennal scrobes vary in form, position, and extent. The mentum is, in all of our genera, at least moderate and visible, excepting Endiagogus and Coleocerus where it is small and much retracted, allowing the parts of the mouth to be visible. The beak at tip exhibits two distinct forms. In the one the genæ are rather deeply notched and allow the base of the mandible to be exposed; in the other there is no emargination or a very feeble one. Accompanying these latter characters we have the upper portion of the beak more prolonged above the mandibles in the former case, while in the latter the mandibles are always greatly exposed above. A lateral view of the beak will therefore show the tip to be obliquely truncate in those with the emarginate genæ, and squarely truncate in the other case.

The scar of the deciduous mandibular cusp is very distinct in all the genera excepting Coleocerus, and is usually on the face of the mandible, although in some genera at the summit of an obtuse process.

The tribes forming this division are shown in the following table:—

Mentum moderate, rarely small, never retracted; sub-mentum not notched at middle; thorax rarely (Pachnæus) with feeble ocular lobes; eyes round;
  Thorax fimbriate at the sides behind the eyes; striæ entire. TANYMECINI.
  Thorax not fimbriate at the sides behind the eyes;
    Genæ emarginate behind the mandibles;
      Rostrum short, robust; tenth striæ confluent with the ninth; claws free, except in Aphrastus. CYPHINI.
    Genæ not or very feebly emarginate; tenth striæ free;
      Rostrum at least moderately elongate, scrobes long; claws free; head not prolonged behind the eyes; articular surfaces of hind tibiæ cavernous; mentum large. EVOTINI.
      Rostrum rather short, scrobes short; head prolonged behind the eyes; claws connate; articular surfaces of hind tibiæ open; mentum small. PHYLLOBIINI.
Mentum small, retracted; thorax with large ocular lobes; eyes transversely oval. PROMECOPINI.

The partial obliteration of the marginal stria occurs in but one tribe, in the others that stria is entire and nearly equally distant from the preceding throughout. The mentum attains the minimum in the last two groups.

Tribe I.—TANYMECINI.

Rostrum moderate, subangulate, subparallel, more or less emarginate at tip and at the sides. Scrobes moderately deep, arcuate, passing beneath the eyes. Antennæ moderate, scape moderately long, usually attaining the hind margin of the eye, sometimes attaining the thorax. Thorax with a short row of bristly hairs behind the eyes (and in Pachnæus very feebly lobed). Scutellum distinct. Metasternum moderately long. Second segment of abdomen longer than the third and fourth together, and separated from the first by an arcuate suture. Articular cavities of hind tibiæ variable. Claws free.

As represented in our fauna, this tribe does not differ from the group indicated by Lacordaire, except in the addition of Pandeletejus.

Our genera are as follows:—

Anterior coxæ contiguous;
  Thorax feebly lobed behind the eyes (the latter transversely oval, pointed beneath) and bisinuate at base. **Pachnæus.**
  Thorax not lobed, base truncate, eyes round, or longitudinally oval;
    Anterior femora normal, the tibiæ simple. **Tanymecus.**
    Anterior femora much longer and stouter than the others, the tibiæ denticulate within. **Hadromerus.**
Anterior coxæ distant;
  Anterior femora larger than the others. **Pandeletejus.**

The articular cavities of the hind tibiæ vary in the genera. They are feebly inclosed in Pachnæus, more decidedly in Tanymecus, and entirely open in the other two genera. Into this tribe *Polydacris modestus* of Cuba should enter. It has very distinct vibrissæ composed of scales, and the anterior coxæ are separated as in Pandeletejus. The tribe, as thus constituted, is not very homogeneous, and with more genera would divide into well-defined groups, each of the above genera constituting a type. With our few genera this appears unnecessary.

Hadromerus opalinus is found in Arizona, the other species in the Atlantic region.

Tribe II.—CYPHINI.

Rostrum robust, deeply emarginate at tip and sides. Scrobes variable. Antennæ moderate, second joint of funicle longer than the first, rarely (Aphrastus) equal to it. Thorax without ocular lobes or fimbriæ. Claws free except in Aphrastus. Articular surfaces of hind tibiæ on the inner face, and cavernous except in Aphrastus, usually glabrous, rarely scaly. Elytra with the outer stria confluent with the next inner at one-third from the base. Metasternum moderately long.

The rostrum is always acutely emarginate in front and at the sides, and in all our genera there is a fine median groove. The supports of the deciduous pieces are usually very prominent, and the deciduous pieces are (as far as seen) elongate, glabrous, falciform, and acute at tip.

The following groups may be recognized:—

Claws free; articular surfaces of hind tibiæ cavernous;
  Elytra wider at base than the thorax, humeri prominent. CYPHI.
  Elytra oval, not wider at base than thorax, humeri rounded. ARTIPI.
Claws connate; articular surfaces of hind tibiæ not cavernous;
  Elytra oval, humeri rounded, body apterous. APHRASTI.

Group I.—**Cyphi.**

Humeri prominent, elytra wider at base, wider than the thorax. Scutellum distinct. Body winged.

Our genera are few in number, and may be distinguished as follows:—

Articular surface of hind tibiæ scaly; scape passing the eyes. **Compsus.**
Articular surface of hind tibiæ glabrous; scape not passing the eyes;
  Scape moderate, scrobes long, passing beneath the eyes; scutellum small, triangular. **Cyphus.**
  Scape short, stout, scrobes short, suddenly arcuate; scutellum rather large, oval. **Brachystylus.**

Brachystylus has been placed by Lacordaire among the Otiorhynchini, but the entire structure is that of the Cyphini, notwithstanding the slight irregularity in the form of the scrobes.

Two species of Cyphus in Arizona, and one of each of the other genera in the Atlantic States are the only representatives known in our fauna.

Group II.—**Artipi.**

Elytra oval or oblong, not wider at base than the thorax, humeri oblique, or broadly rounded. Scutellum distinct. Antennæ long, scape passing the eyes behind. Articular surfaces of hind tibiæ cavernous. Rostrum rather deeply notched behind the base of the mandibles.

The essential difference between this group and the preceding is found in the form of the elytra. The antennæ (especially the scape) are longer and more slender. The rostrum varies in form and is usually short, stout, flattened above, and deeply notched at tip. In one genus however the rostrum is decidedly Periteloid with less divergent alæ. All the genera excepting Artipus have the anterior tibiæ denticulate within.

Our genera are as follows:—

Rostrum short, stout; scrobes linear in front;
  Articular surface of hind tibiæ scaly; anterior tibiæ not denticulate within. **Artipus.**
  Articular surfaces of hind tibiæ glabrous; anterior tibiæ more or less denticulate within;
  Articular surfaces of hind tibiæ very feebly or not cavernous; tips of hind tibiæ with, at most, a double row of fimbriæ. **Aramigus.**
  Articular surfaces of hind tibiæ strongly cavernous; tips of hind tibiæ with oval scaly space. **Phacepholis.**
Rostrum moderately elongate; scrobes cavernous in front;
  Articular surfaces of hind tibiæ sparsely scaly. **Achrastenus.**

Artipus has a form somewhat resembling Cyphus, without however having the humeri prominent. The next two genera, especially Aramigus, resemble an elongate Strophosomus. Achrastenus resembles Peritelus.

The species all occur in the Atlantic region, extending in some cases to Colorado, Texas, and Montana.

Group III.—**Aphrasti.**

Head broader behind the eyes; scrobes slightly visible from above, deep, directed toward the eyes but not reaching them, gradually broader behind. Antennæ moderate. Elytra slightly wider at base than the thorax, humeri obtuse. Scutellum distinct. Articular surface of hind tibiæ not cavernous, slightly scaly. Claws connate.

The structure of the tarsal claws will serve to distinguish this group from either of the preceding. The outer stria of the elytra joins the next inner at one-third from the base as in all the Cyphini and the genæ are deeply emarginate.

Two species of Aphrastus constitute this group in our fauna, and occur in the Atlantic region.

Tribe III.—**EVOTINI.**

Rostrum longer than the head, usually quadrangular and dilated at tip, the latter emarginate. Genæ not or feebly emarginate. Head not prolonged behind the eyes. Scutellum distinct. Elytra wider at base than thorax (Omileus excepted), outer stria entire, not confluent with the next. Articular surfaces of hind tibiæ on the inner face, at least moderately cavernous. Claws free.

This tribe is constructed at the expense of the Cyphides as defined by Lacordaire. It contains those genera in which the rostrum is elongate, the tenth stria entire, and the genæ not or very feebly emarginate.

The following groups may be recognized:—

Submentum not pedunculate; mentum broad;	
Humeri prominent; thorax bisinuate at base.	EXOPHTHALMI.
Humeri very oblique or rounded; thorax truncate at base.	OMILEI.
Submentum pedunculated; mentum narrow;	
Humeri prominent; thorax truncate at base.	EVOTI.

The last group shows strong affinities with the next tribe.

Group I.—**Exophthalmi.**

Rostrum longer than the head, subquadrangular, slightly dilated at tip, which is feebly emarginate; genæ moderately emarginate. Submentum not pedunculate, mentum broader than long, entirely concealing the maxillæ. Antennæ moderate, scape at most merely passing the eye. Scrobes narrow, moderately arcuate, passing beneath the eyes. Thorax distinctly, at times feebly, bisinuate at base. Elytra wider than the thorax at base, or at least with the humeri very distinct, neither oblique nor obliterated. Scutellum distinct. Articular surfaces of hind tibiæ very feebly cavernous, glabrous. Claws free.

One species of Lachnopus, from Florida, represents this group in our fauna.

Group II —**Omilei.**

Rostrum longer than the head, narrow, quadrangular, and slightly dilated in front. Genæ feebly emarginate. Thorax truncate at apex and base. Elytra not wider than the thorax, feebly emarginate at base, humeri either very oblique or broadly rounded. Articular surfaces of hind tibiæ very feebly cavernous.

The differences between this group and the preceding are feeble, and with other genera would probably be united with it.

Two genera are at present known, one only native, and represented by one Texan species, *Omileus epicæroides*.

Group III.—**Evoti.**

Rostrum elongate, strongly dilated and auriculate at tip. Scrobes visible from above. Scutellum distinct. Elytra wider at base than the thorax, humeri moderately prominent; marginal stria entire. Articular surfaces of hind tibiæ feebly cavernous. Claws free.

Evotus naso is the only representative of this group known. It occurs from Colorado to Oregon.

Tribe IV.—**PHYLLOBIINI.**

Head prolonged behind the eyes, these round or slightly oval. Mentum small, usually concealing the maxillæ. Rostrum usually stout, cylindrical, truncate or very feebly emarginate at tip. Genæ not emarginate. Scrobes short, subterminal. Meso- and metasternal side pieces broad, the former diagonally divided. Articular surfaces of the hind tibiæ terminal, glabrous. Claws connate. Tenth elytral stria free in its entire extent. Scutellum distinct.

The above characters serve to isolate a number of genera evidently closely allied among themselves, and also with well-marked affinity with certain members of the tribe Cyphini. The mandibular scar is not prominent in any of our genera, but is round and directly on the face of the mandible itself. The deciduous piece is moderately long, glabrous, and regularly falciform. The mentum varies in size in the genera of this group, but not to the extent of causing Scythropus and Phyllobius to be widely separated.

The following genera compose this tribe in our fauna:—

Elytra wider at base than the thorax;
  Mentum entirely concealing the maxillæ. **Phyllobius.**
  Mentum smaller, maxillæ visible at the sides;
    Rostrum slightly narrower than the head; alæ slightly divergent. **Cyphomimus.**
    Rostrum short, stout; alæ not divergent. **Scythropus.**
Elytra elongate, oval, as narrow at base as the thorax;
  Mentum small, maxillæ entirely exposed. **Mitostylus.**

In Mitostylus the submentum is very slightly pedunculate. Scythropus has the gula semicircularly emarginate, and the maxillæ visible at the sides of the mentum, the other three genera have the gular notch nearly square. In the genera 2 and

4 the mentum is very narrow and the other parts of the mouth very distinctly visible.

Scythropus occurs on both sides of the continent; the others in the Atlantic region.

Tribe V.—PROMECOPINI.

Rostrum short, stout, dilated (Coleocerus) or not (Eudiagogus) in front, tip emarginate. Antennæ moderate, scape passing the eyes or not, funicle 7-jointed; club oval. Scrobes deep, arcuate, confluent or not beneath. Thorax with large lateral lobes, and deeply emarginate beneath. Scutellum distinct. Abdomen normal. Tibiæ feebly mucronate. Tarsal claws free.

This tribe, corresponding with that of Lacordaire, may be considered the most sharply defined and natural of the division. Its small and retracted mentum, large thoracic lobes and the deep emargination of the front of the thorax beneath, at once distinguish it. As in the preceding tribe the genæ are entire and the mandibles covered at base.

The following are the genera in our fauna:—

Rostrum strongly dilated at tip, scrobes meeting beneath the eyes; mesosternum protuberant. **Coleocerus.**

Rostrum very feebly dilated, cylindrical flattened, scrobes not meeting beneath the eyes, but turning forward; mesosternum not protuberant;

- Elytra broadly oval, scutellum small; metasternum short. **Aracanthus.**
- Elytra oblong, broader at base than the thorax, scutellum transverse; metasternum moderately long. **Eudiagogus.**

In the last two genera the articular cavities of the hind tibiæ are shallow, the outer free edge is, however, double in Eudiagogus. In Coleocerus the hind tibiæ are truncate at tip, forming an oval, scaly space, the outer edge of which is formed by a moderately sharp ridge not margined with spinules. The tibiæ are feebly mucronate in all of the genera, although the contrary is stated by Lacordaire.

Coleocerus occurs in Arizona and Texas; Aracanthus from Missouri to Texas; and Eudiagogus from Florida to Texas.

FAM. LXXIX.—CURCULIONIDAE.

Mentum varying in size, never concealing the base of the maxillæ, larger in the first sub-families and tribes, smaller and oval in those last placed in this work, ligula and palpi also varying in size.

Maxillæ exposed, palpi short, 4-jointed, rigid.

Mandibles varying according to sub-family and tribe, as mentioned below, but never with an apical scar.

Antennæ inserted at the side of the beak, varying in position, usually geniculate (only feebly so in Ithycerus, Cleonini, and Tachygonus), with the scape long (short in Ithycerus and Tachygonus), straight in Apioninæ; funiculus with from 5–7 joints; club composed of three joints and a terminal appendix, annulated, rarely articulated, and then divided into three joints; surface usually entirely sensitive, rarely (Pissodes, Lissorhoptus, Eurhoptus, Baris) with the basal joint shining.

Head globose, eyes usually transverse, sometimes round; beak varying in form and length; antennal scrobes wanting in Apioninæ; labrum wanting.

Prothorax varying in form, without lateral sutures separating the prosternum; coxal cavities confluent or separate, inclosed behind.

Mesosternum variable in width, side pieces differently divided according to tribe, never attaining the coxal cavity. Metasternum variable in length, side pieces sometimes broad, sometimes narrow, indistinct only in Trachodes.

Elytra without epipleuræ, but with an acute fold on the inner surface, limiting a deep groove in which the superior edge of the abdomen fits; pygidium sometimes covered, sometimes exposed.

Abdomen with five ventral segments, first and second closely connate; pygidium of male divided so as to form an anal segment.

Front coxæ rounded, sometimes contiguous, sometimes distant; middle coxæ rounded, more or less separated; hind coxæ oval, not prominent, more or less distant, sometimes attaining the elytral margin, but usually entirely inclosed.

Legs variable; hind trochanters long in Apioninæ, short in all others; tibiæ usually mucronate, or hooked at tip; sometimes (especially the hind pair) truncate. Tarsi usually dilated, with the third joint bilobed and spongy beneath, rarely narrow. Claws varying according to tribe, either simple or toothed, diverging and movable, or fixed and approximate; sometimes connate, and rarely single (Brachybamus, Mononychus, Barilepton, and Eisonyx), entirely wanting in some foreign genera.

This family is by far the largest in the Rhynchophora, and therefore exhibits a greater range of variation in some of the important organs than is observed in the other families. Certain of the most remarkable divergences from the average type may, however, be separated as sub-families, exhibiting relationships with other families, without losing the essential characters of this family; that is to say, the mandibles without scar, the tarsi with the third joint more or less dilated, or not spinous beneath, the antennæ with annulated or articulated club.

Of such sub-families five may be recognized in our fauna; all of very limited extent, except the Curculioninæ.

They may be separated as follows:—

A. Condyles of mandibles on outer side, motion lateral;
  Mandibles stout, feebly emarginate at tip, with the inner edge sharp; gular peduncle broad; beak short, broad. (p. 459) SITONINÆ.
  Mandibles without sharp inner edge; apparently emarginate at tip, with an additional cusp; gular peduncle broad;
    Antennæ geniculate; gular margin prominent, peduncle and mentum retracted; claws not toothed. (p. 460) ALOPHINÆ.
    Antennæ straight, club annulated, gular margin not prominent; claws toothed. (p. 462) ITHYCERINÆ.
  Mandibles varying in form, usually 3-toothed, sometimes oblique without teeth,* gular margin not prominent, peduncle usually long;
    Antennæ straight, 11-jointed, inserted in foveæ, hind trochanters long. (p. 463) APIONINÆ.
    Antennæ geniculate, rostrum with distinct scrobes, hind trochanters short. (p. 464) CURCULIONINÆ.
B. Condyles of mandibles on upper side, motion vertical. (p. 497) BALANININÆ.

Sub-Family I.—SITONINÆ.

The species of this sub-family have been heretofore classed with the Otiorhynchide group Naupacti. They differ, however, essentially by family characters; the mandibles are short, very stout with the outer side convex, roughly punctured, and quite destitute of the apical scar which indicates the deciduous cusp; they are

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* In Desmoris they are also toothed on the outer edge as in Rhynchitidæ.

broadly emarginate at tip, and the inner edge is acute. These insects are easily known from other Curculionidæ by the mentum larger, more quadrate, slightly concave, and supported on a broad, but not long, gular peduncle. The maxillæ are exposed as in the lower Otiorhynchidæ, and as in all Curculionidæ, and it therefore seems singular that Lacordaire should have classed them with his Adelognathes Cyclophthalmes, without noting the exception in this respect which they make in common with Cratopus and Elytrodon.* The condyle of the base of the mandible is visible on the outer side, the beak is short, broad, flat, and emarginate at tip. The antennal grooves extend forwards quite to the base of the mandibles; they are short and curve abruptly downwards behind the insertion of the antennæ, which are geniculate, with elongate annulated club covered with sensitive surface. The eyes are small, rounded, convex, and rather finely granulated. The front coxæ are contiguous and prominent, the hind coxæ widely separated and extend to the side margin; the tibiæ truncate at tip, without terminal hook. Tarsi dilated, spongy beneath; claws slender, simple, divergent. The ventral segments are not very unequal, and the sutures are nearly straight. The side pieces of the mesothorax are diagonally divided, and the epimera do not largely attain the prothorax; those of the metathorax are narrow, and suddenly dilated in front.

A few species of Sitones occur in our fauna, some of which are also found in Europe.

Sub-Family II.—ALOPHINÆ.

The small group of Curculionidæ, represented in Europe by Alophus, and in our fauna by several other genera, is sufficiently distinct in its oral structure to warrant its reception as a subfamily. The convex oval elytra, without humeral angles, and with the posterior part strongly deflexed, added to the more or less rounded prothorax, give an appearance not unlike certain Otiorhynchidæ; and the prolongation of the antennal grooves to the tip of the rostrum, which is rather stout, increases the resemblance.

There are, however, radical differences in the mandibles; which are nearly flat externally and punctured; pincer-shaped, with a sharp edge at the apex, which is more or less emarginate, and without apical scar or deciduous piece. The mentum is tolerably large, trapezoidal, and flat, retracted with the gular peduncle, which is broad; the posterior edge of the latter is prominent, so that the mouth appears hollow; the maxillæ are exposed, as are also the ligula and palpi.

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* Lacordaire, Gen. Col. vi. 19, note.

The beak is as long as the prothorax, rather stout, usually a little wider at tip, with distinct apical wings; the tip is feebly emarginate, and marked also in the first two genera with a deep angulated impression; and (except in Lophalophus) a medial groove. The eyes are transverse, narrowed below, and finely granulated. The antennæ are geniculated; the scape long, the funicle seven-jointed (the first and second joints longer), the club annulated, oval, pointed; the antennal grooves usually long, well-defined, narrow, and reaching nearly to the lower angle of the eye, except in Lophalophus, where they are wider and shorter. The prothorax is distinctly lobed behind the eyes; the front coxæ are contiguous and prominent. The metasternum is nearly as long as the first and second ventral segments, and the side pieces are narrow; first, second, and fifth ventral segments long; third and fourth united equal to either of the others. Legs moderate in length, slender; tibiæ truncate at tip, hind pair not mucronate at the inner angle; tarsi dilated, claws entire, separate.

Our genera are as follows:—

A. Beak deeply channelled; tarsi brush-like beneath;
- Elytra oval, nearly smooth with faint striæ. **Triglyphus.**
- Elytra oblong oval, with distinct humeri, scabrous punctured, with distinct rows of punctures. **Plinthodes.**

B. Beak more finely channelled;
- Tarsi setose beneath; elytra with strong rows of punctures, pubescence mixed with scales. **Acmægenius.**
- Tarsi brush-like beneath, elytra with obsolete striæ, pubescence above not mixed with scales. **Trichalophus.**

C. Beak finely carinate; elytra with rows of punctures, squamose, with small intermixed bristles. **Lophalophus.**

D. Beak not carinate; body covered with scales with rows of bristles on the elytra; second joint of funiculus much shorter than first, equal to the third. **Lepidophorus.**

Lophalophus differs from the European Alophus, chiefly by the beak having lateral grooves, which are wanting in the latter genus.

Sub-Family III.—ITHYCERINÆ.

This sub-family is represented by a single species, and is well distinguished from all other Curculionidæ by the following assemblage of characters.

Mandibles prominent, not very stout, emarginate at tip, with an inferior cusp; mentum large, quadrate, supported on a broad and short gular peduncle; ligula and labial palpi small. Beak short, rather broad, one-half longer than the head, antennal grooves wanting; eyes small, rounded, convex. Antennæ not at all geniculate; first joint scarcely longer than the second; third longer than the second; 4–8 gradually a little shorter and broader; club small, oval pointed, annulated. Side pieces of mesosternum diagonally divided; epimera not attaining the prothorax; those of metasternum moderately wide, slightly dilated in front. Ventral segments nearly equal in length; sutures straight, well marked. Front coxæ contiguous, middle coxæ narrowly separated; hind coxæ transverse, narrow, attaining the side margin. Legs moderate in length, slender, tibiæ truncate at tip, with two small terminal spurs; articular surface terminal, well defined. Tarsi broad, spongy, pubescent beneath; third joint deeply bilobed; claws divergent, armed at the middle with a small acute tooth.

Inner surface of elytra with the usual fold, commencing near the posthumeral sinuosity, running parallel to the margin as far back as the beginning of the apical curvature; apical region very finely scabrous, with a narrow marginal band of very fine golden pubescence.

In this sub-family the Curculionidæ make the nearest approach to the Rhynchitidæ.

But one species, *Ithycerus noveboracensis*, in the Atlantic States represents this sub-family from Canada to Texas; sometimes quite injurious to fruit trees by gnawing off the tender buds, as is observed by C. V. Riley (Third Report Ins. Inj. Missouri, p. 57). The anal segment of the ♂ is very convex and protuberant, so as to be visible from beneath, simulating a ventral segment. The pygidium is deeply grooved in both sexes, and projects beyond the elytra.

Sub-Family IV.—APIONINÆ.

Mentum narrow, linear, much longer than wide, inserted upon a short gular peduncle of equal width; slightly channelled at tip, reaching nearly to the mandibles, and quite concealing the ligula and palpi, which are very small, maxillæ entirely filling the buccal fissures with a large corneous mass; there is but one broad lobe, densely fringed with hairs; palpi not visible; on dissection they appear very short, with not more than three joints. Mandibles three-toothed, the middle tooth curved, acute, forming the apex; near the tip on the anterior edge is a small tooth; the third tooth is on the inner side and very large.

Antennæ inserted in foveæ, at the sides of the beak, eleven-jointed, straight, first joint longer than second; these two are stouter than the succeeding ones; 9–11 broader and longer, forming an oval pubescent club, which is pointed at the end.

Head prominent, not deflexed, not narrowed behind the eyes, which are rounded, convex, and not finely granulated; beak long and slender, sometimes stouter towards the base; without antennal grooves.

Prothorax truncate, in front, without postocular lobes, subsinuate behind, gradually narrowed from base to tip; prosternum very short, coxal cavities rounded, confluent, closed behind; prosternal sutures distinct.

Mesosternum small, narrow between the coxæ; side pieces diagonally divided; epimera triangular, pointed at the inner side, and not attaining the coxal cavities. Metasternum a little longer than the first ventral segment, side pieces narrower.

Elytra ample, sometimes almost ventricose, deeply striate, entirely covering the pygidium; without epipleuræ; fold on the inner surface parallel with the side margin, diverging gradually from it towards the tip. Wings large.

Abdomen with the first and second ventral segments large, closely connate, with a fine straight suture; third and fourth segments very short, sutures straight; fifth longer, flat, rounded at tip; dorsal segments membranous, pygidium small; anterior coxæ conical, prominent, contiguous; middle coxæ round, slightly separated; hind coxæ small, transverse, rather widely separated.

Legs rather long and stout; thighs somewhat clavate; hind trochanters long; tibiæ truncate at tip, without spurs or spines;

tarsi dilated, first point scarcely longer, third bilobed; claws divergent, appendiculate, toothed, or simple.

The species of this sub-family are small, and have a peculiar and easily recognized appearance. Lacordaire has placed them, as a tribe, near his Attelabides, with which, however, as will be seen by the foregoing description, they have but little resemblance or affinity.

Lacordaire describes them as apterous; in all the species we have examined the wings are quite well developed. We also find that in many of our species the claws are toothed or appendiculate, while in a few they are simple, and we have therefore attempted to group them in our collections upon those characters, the position of the antennæ, and the relative length of the first and second joints of those organs.

The species are numerous in all parts of our country, and many are yet undescribed.

Sub-Family V.—CURCULIONINÆ.

The species of this sub-family may be recognized by the mandibles being rarely emarginate at tip, but either bi-emarginate, with three apical cusps, or oblique, with three cusps on the inner side, which sometimes become effaced or obsolete. In the first tribes the inferior cusp is also smaller, and less prominent, but it speedily becomes more developed, and it is by the final dominance of that cusp, with the edge of the mandible which corresponds to it, that the oblique form with the teeth on the inner edge, is assumed; and a still greater prominence of this inferior edge and cusp results in the oblique or flattened form of mandible seen in certain Cryptorhynchini and Barini. From them the transition is easy to the next sub-family Balanininæ in which the mandibles are still more depressed, and the condyle instead of being on the outer side comes to the upper surface, so that the movement is vertical, instead of horizontal as in all other Coleoptera.

It must also be observed that in certain Phytonomini the interior cusp becomes very small or obsolete, so that the mandibles seem to be only emarginate at tip. They thus approach the first three sub-families, but are readily known by not possessing the peculiar characters which distinguish each of them. The beak is not short and flat, and the eyes are not round, as in Sitoninæ; the gular margin is not prominent as in Alophinæ; and the antennæ are not straight, nor the claws appendiculate as in Ithycerinæ.

After eliminating the types which seem of sufficient importance to be regarded as having family or sub-family value, there still remains this vast complex, which presents no difficulty in circumscription. It nevertheless comprehends so many diversified combinations and representations of a few simple characters, and under each, so many variations in a few definite directions, that much labor, and very careful observation is necessary to devise a scheme which will enable the genera to be naturally grouped, and easily recognized.

We believe that the following table will be found sufficient for the proper elucidation of our limited fauna, and perhaps with a certain amount of expansion and modification, may serve as a basis for a general arrangement of the sub-family.

Front coxæ contiguous (except in Pissodes, Phycocœtes, and Miarus). 2.
Front coxæ separated (except in Conotrachelus). 14.
2. Ungues simple; pygidium not exposed. 3.
Ungues appendiculate, toothed or cleft (except in some Magdalis and Cionini). 9.
3. Eyes not contiguous beneath. 4.
Eyes contiguous beneath. (p. 496) Hormopini.
4. Mandibles biemarginate, and 3-toothed at tip. 5.
Mandibles usually emarginate, 2-toothed at tip, articular surface of at least the hind tibiæ terminal. (p. 466) Phytonomini.
5. Tibiæ fossorial. (p. 467) Emphyastini.
Tibiæ not fossorial. 6.
6. Side pieces of metathorax distinct. 7.
Side pieces of metathorax indistinct. (p. 478) Trachodini.
7. Lateral angles of first ventral segment not visible. 8.
Lateral angles of first ventral segment uncovered. (p. 469) Cleonini.
8. Mentum transverse, labial palpi large. (p. 468) Hylobiini.
Mentum smaller, labial palpi small. (p. 471) Erirhinini.
9. Ventral sutures straight. 10.
Ventral sutures angulated at the sides. 12.
10. Prothorax contiguous to the elytra. 11.
Prothorax pedunculate. (p. 478) Otidocephalini.
11. Hind angles of prothorax acute. (p. 479) Magdalini.
Hind angles of prothorax rectangular or rounded. (p. 480) Anthonomini.
12. Funicle six or seven-jointed. 13.
Funicle five-jointed. (p. 483) Cionini.
13. Scape extending upon the eyes. (p. 481) Prionomerini.
Scape not extending upon the eyes. (p. 482) Tychiini.

14. Ventral sutures more or less curved. 15.
Ventral sutures entirely straight. (p. 485) LÆMOSACCINI.
15. Humeri of elytra truncated by side pieces of mesothorax. (p. 494) BARINI.
Humeri not truncated. 16.
16. Beak received in or upon the breast. 17.
Beak not received in or upon the breast;
Prosternum continuous on the same plane with the mesosternum. (p. 483) TRYPETINI.
Prosternum distant from the mesosternum. (p. 484) DERELOMINI.
17. Eyes more or less covered in repose, except in the group Phytobii. 18.
Eyes not covered. 19.
18. Body oval, pygidium covered. (p. 486) CRYPTORHYNCHINI.
Body broad, pygidium exposed. (p. 491) CEUTORHYNCHINI.
19. Antennæ geniculate, eyes very large. (p. 489) ZYGOPINI.
Antennæ straight. (p. 490) TACHYGONINI.

Tribe I.—**PHYTONOMINI.**

Among the tribes in which the ungues are simple and separate, and the pygidium not exposed, the present one may be distinguished by the form of the mandibles, and by the hind tibiæ being truncate at tip, with the articular surface terminal, and though somewhat oblique, not lateral as in Hylobiini. It follows from this that the terminal spine representing the spur is situated on the inner side of the apical surface.

The mentum is oblong, and supported on a gular peduncle which is not longer than wide, and emarginate. The ligula and labial palpi are less developed than in Hylobiini; the maxillæ are entirely exposed. The mandibles are short, very stout, pincer-shaped, emarginate at tip (except in *Phytonomus punctatus*), convex and sparsely sculptured on the outer surface, the basal condyle large. Antennæ inserted near the tip of the beak, geniculate; scape long, club elongate-oval, pointed, annulated, covered with sensitive surface; funiculus 7-jointed; the seventh joint in some species connected with the club. Beak moderately long, not slender, antennal grooves extending nearly to the tip, deep, directed towards the lower part of the eyes, which are more or less transverse and narrowed beneath. Front coxæ round; contiguous; middle coxæ round, narrowly separated, entirely inclosed by the meso- and metasternum. Side pieces of mesosternum diagonally divided; of the metasternum, narrow dilated in front, the outer angle making a sinuosity in the side margin of the elytra. Ventral segments unequal; first and second longer;

third and fourth shorter; fifth as long as the two preceding united; sutures straight; the lateral angles of the first segment are covered by the elytra, and the intercoxal process is broad.

The proportions of the ventral segments permit the recognition of two groups.

A. Ventral segments not very unequal; postocular lobes of prothorax obsolete. PHYTONOMI.
  Articular surface of hind tibiæ well defined, terminal. **Phytonomus.**
  Articular surface of hind tibiæ ill-defined, oblique. **Lepyrus.**
B. Ventral segments very unequal; third and fourth short, united equal to one of the others. LISTRODERI.
  Tibiæ strongly mucronate; second joint of funiculus much longer than the first. **Listronotus.**
  Tibiæ feebly mucronate; first joint of funiculus as long as, or but little longer than the second. **Macrops.**

Phytonomus occurs on both sides of the continent; Lepyrus in Kansas and Canada. Listronotus and Macrops have a general distribution.

Tribe II.—**EMPHYASTINI.**

This tribe is evidently closely related to Hylobiini, and agrees with it in the structure of the mouth, but differs from it, as from all other tribes in our fauna, by the peculiar form of the tibiæ, which are fitted for digging.

The front tibiæ are compressed, slender, subsinuate, prolonged beyond the articulation of the tarsus into a broad process, rounded at tip, and concave beneath; the spur is small and straight; the middle tibiæ are roughly tuberculate and setose, with the apical margin repand, dilated on the outer side, and armed with a straight fixed spur at the inner side; the hind tibiæ are bent outwards, tuberculate and setose; much thickened towards the tip, with very large and acutely margined corbels. Tarsi sparsely setose beneath, and not spongy; third joint not dilated nor bilobed; fourth joint moderate in size, claws slender simple, and divergent.

The antennæ are geniculate; funiculus 7-jointed; first joint longer; 2–7 gradually broader, forming a perfoliate stem uniting with the club, which is oval, annulated, and pubescent. Beak stout, shorter than the prothorax, deeply grooved; antennal grooves extending to the eyes, which are small, nearly round, and coarsely granulated.

Prosternum not emarginate beneath; front coxæ contiguous, middle ones slightly separated, metasternum short, side pieces narrow, hind coxæ rather large, oval, widely separated, extending to the elytral margin. Thighs stout, unarmed. Ventral segments unequal; third and fourth united equal to the second or fifth; sutures straight, the first obliterated at the middle.

The above characters are drawn from Emphyastes. The Australian genus Aphela only differs by the legs being less stout; the tibiæ less expanded or thickened towards the tip, and by the beak not being grooved.

Emphyastes fucicola is found on the Pacific sea-coast from Alaska to San Diego.

Tribe III.—HYLOBIINI.

The mandibles in this tribe have two apical teeth, of which the lower one is a little shorter; there is besides a cusp on the inner edge, so that they become three-toothed. This normal form is preserved through many of the following tribes, modified only by the greater development of the inferior edge and cusp, which by assuming more prominence gives finally an oblique form to the mandible. The gular peduncle is longer than wide, a little wider in front, truncate anteriorly; the mentum is transverse, not large, and the palpi are rather more developed than in the following tribes. The beak is rather long, not slender, except in Pissodes, and the antennal grooves do not extend to the tip. Eyes transverse. The antennæ are geniculate; scape long, funiculus 7-jointed, club oval, pointed, annulated, entirely pubescent and sensitive, except in Pissodes, where the first joint is smooth and subglabrous.

The front coxæ are contiguous and the cavities confluent, except in Pissodes, where they are slightly separated. The middle coxæ are not widely separated; the side pieces of metasternum diagonally divided, with the epimera triangular, not attaining largely the base of the prothorax. Side pieces of metasternum narrow, slightly dilated in front. Hind coxæ widely separated, attaining the lateral margin, or nearly so.

Ventral segments unequal, first, second, and fifth longer; sutures straight and deeply impressed, except the first which is finer and sometimes slightly sinuate. Pygidium covered by elytra.

Legs stout, or strong; tibiæ armed with a strong hook at tip; articular face lateral; terminal edge of hind tibiæ double, except in Pissodes; tarsi with third joint dilated, spongy beneath; claws simple, divergent.

The species are of moderate size, never very small, and are subcortical in their habits; they mostly infest coniferous trees.

This tribe leads directly to the Erirhinini, from which they differ chiefly by the less delicately organized mouth, and generally stronger and coarser structure, and by the double edge or corbel to the terminal margin of the hind tibiæ. This character, common in Otiorhynchidæ, now reappears for the last time in the present family.

These corbels are very large and wide in Pachylobius, but narrow in the other genera.

Mesosternum moderately long.	2.
Mesosternum very short.	**Plinthus.**
2. Front coxæ contiguous.	3.
Front coxæ slightly separated.	**Pissodes.**
3. Thighs clavate, strongly toothed.	4.
Thighs feebly clavate, not toothed.	6.
4. Tibiæ of usual form.	5.
Tibiæ short and very thick.	**Pachylobius.**
5. Body with spots of fine pubescence.	**Hylobius.**
Body with spots of small scales.	**Hilipus.**
6. Eyes small, elytra oval, convex.	**Hypomolyx.**
Eyes larger, elytra elongate, parallel.	**Eudocimus.**

Except Plinthus, from the northern part of the Pacific region, and Pissodes, which extends across the continent, these genera occur only in the Atlantic region. Hypomolyx is founded upon *Hylobius pineti* (pinicola *Couper*), which is found also in northern Europe. Hilipus is numerously represented in the tropics, but by only one species in the Southern States.

Tribe IV.—**CLEONINI.**

The character which distinguishes this from all neighboring tribes, is that the elytra are less extended on the flanks of the metathorax and abdomen, so that the lateral angles of the first ventral segment become visible.

The body is never very stout, and frequently is almost linear. The gular peduncle is sometimes short, sometimes long, emarginate at tip; mentum large, flat; ligula feebly or not prominent; palpi much less developed than in Hylobiini. Tibiæ more or less mucronate at tip; articular surface lateral; corbels wanting; claws connate at base, or at least approximate. Antennæ sometimes feebly geniculate; joints of funicle gradually broader; club elongate-oval, annulated, pubescent, and sensitive.

The other characters are variable. The beak is either short and thick, or long and cylindrical, but not slender; the tarsi are dilated and spongy beneath, with the third joint broad and bilobed, or only hairy, with the third joint shorter and emarginate. The first and second ventral segments are long and connate; in the elongate species the other segments are moderately long; in the species with thick short beak they are shorter. The antennæ are inserted at a variable distance from the tip of the beak.

Sexual differences are not apparent in the short-beaked species; in some of the elongate forms the beak is longer in the female.

Gradational characters are observed in the form of the beak, antennæ, tarsi, and claws, varying by almost insensible degrees, so as to render the classification of this tribe very difficult. After several efforts, we are only able to offer the following table for the identification of the genera we have examined:—

Beak flat, stout, more or less grooved, somewhat dilated at tip; prothorax angulated on the sides near the tip, then suddenly constricted. Antennæ rather stout, feebly geniculated; ventral segments 3–5 shorter than in the subsequent genera. Tarsi usually not spongy beneath, in which case the third joint is emarginate, not bilobed. 2.

Beak cylindrical, rather stout, not dilated at tip; prothorax usually not angulated at the side; ventral segments 3–5 not so short; tarsi usually spongy beneath, claws connate at base. 4.

Beak cylindrical, varying in length, generally smoother than in the preceding genera; antennæ less approximate to the tip; prothorax not angulated at the sides; ventral segments 3–5 not very short; tarsi spongy beneath, third joint broad, bilobed; claws connate at base; second joint of funicle equal to first. **Lixus.**

2. Prosternum without spines in front of the coxæ. 3.
Prosternum armed with short spines in front of the coxæ. **Centrocleonus.**

3. Beak strongly carinate, third joint of hind tarsi not spongy beneath. **Stephanocleonus.**
Beak feebly carinate, third joint of hind tarsi broad, spongy beneath. **Cleonopsis.**

4. Hind tarsi with third joint shorter, emarginate, not spongy beneath. **Cleonaspis.**
Hind tarsi with third joint broader, bilobed, spongy beneath. **Cleonus.**

One Stephanocleonus occurs at Lake Superior, and one Cleonus in Texas, and one in Massachusetts; Lixus is universally distributed. The other species are found from California to Kansas.

Tribe V.—**ERIRHININI.**

This tribe consists of a great number of species, all of small size, and representing a large number of genera. Most of them are found near water, on plants, and some of them are quite aquatic in their habits. In the beak, prosternum, tibiæ, and tarsi they differ greatly, so as to permit the recognition of several groups, as will be seen below, but they agree in the following characters:—

Mandibles with three teeth, separated by two emarginations, the middle tooth more prominent; in the group Desmorhines the outer side of the mandibles, by the transposition of the apical tooth, becomes toothed as in Rhynchitidæ; gular peduncle longer than wide, slightly emarginate, mentum small, not transverse, ligula and palpi prominent, smaller than in Hylobiini. The beak is cylindrical, sometimes very long and slender, sometimes rather stout; the antennal grooves commence at a distance from the tip, descend obliquely, and sometimes become confluent behind. The antennæ are geniculate, the scape long and slender; funiculus usually 7-jointed, sometimes (Endalus) 6-jointed; club oval, annulated, entirely clothed with sensitive surface except in Lissorhoptrus. Prothorax with or without postocular lobes; front coxæ contiguous, prosternum flat, emarginate, or not, in front; sometimes (Bagous) broadly sulcate for reception of the beak. Mesosternum with the side pieces diagonally divided, epimera not attaining widely the base of the prothorax. Metasternum usually long, rarely (Phycocœtes) very short; side pieces narrow, dilated in front. Hind coxæ widely separated, transverse, narrower externally, and extending almost to the elytral margin. Legs never very stout, thighs usually simple, rarely (Dorytomus) toothed; tibiæ truncate at tip and feebly mucronate in most genera, strongly unguiculate in Bagoi. Tarsi usually dilated, narrow in certain genera; last joint sometimes long, sometimes short; claws not toothed, divergent, sometimes connate (Desmorhines) or single (Brachybamus); last joint wanting in the European genus Anoplus.

Ventral segments unequal, third and fourth united about equal to the second or fifth; sutures straight, excepting the first which is sinuate in most genera, and the last, which is broadly curved in Stenopelmus.

Our genera are numerous, and indicate several groups; in fact, all of those recognized by Lacordaire are represented, and we have found it necessary to establish two others.

The affinities of the tribe are in several directions; towards the Hylobiini, Emphyastini (Phycocœtes), Ceutorhynchini (Hydronomi).

	Metasternum as long as first ventral segment.	2.
	Metasternum very short.	VIII. PHYCOCŒTES.
2.	Eyes contiguous to prothorax.	3.
	Eyes distant from the prothorax;	
	Third tarsal joint bilobed; tibiæ truncate.	III. EUGNOMINI.
	Third joint feebly emarginate; tibiæ feebly emarginate.	V. STENOPELMI.
3.	Body scaly or pubescent.	4.
	Body with waterproof crust.	5.
4.	Beak not constricted at base; claws divergent.	I. ERIRHINI.
	Beak strongly constricted; claws connate or approximate.	II. DESMORHINES.
5.	Tarsi with third joint bilobed.	6.
	Tarsi with third joint simple.	VII. HYDRONOMI.
6.	Last joint of tarsi short.	IV. CRYPTOPLI.
	Last joint of tarsi long.	VI. BRACHYPI.

Group I.—Erirhini.

The species have the beak long, usually slender, the mandibles with two sharp teeth at the end; the inferior cusp in Erycus comes to the outer margin, and is not very prominent, but thus shows a tendency to assume the position which it has in the next group. The antennal grooves are directed against the eyes, and do not converge beneath. The scape nearly or quite attains the eyes, and the first, and usually the second joint of the funicle are longer than the others. The mesosternum is as long as the first ventral; the legs are slender, tibiæ truncate at tip, and feebly mucronate; the tarsi are spongy beneath, with the third joint dilated and bilobed; last joint long, claws rather strong, simple, divergent.

This group recedes in the direction of the Phytonomini and Hylobiini.*

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* The following species do not belong to this tribe: *Erirhinus ephippiatus* Say, has the thighs not toothed, and the claws broadly appendiculate;

1.	Thighs not toothed, prosternum emarginate in front.	2.
	Thighs toothed, prosternum not emarginate.	**Dorytomus.**
2.	Body pubescent or glabrous.	3.
	Body densely clothed with scales.	**Grypidius.**
3.	Antennæ inserted far from the tip of the rostrum.	**Erycus.**
	Antennæ inserted near the tip of the rostrum, grooves not confluent behind.	4.
4.	Beak elongate, arcuate.	**Procas.**
	Beak stout, and nearly straight.	**Acrisius.**

Procas and Acrisius are confined to the Atlantic slope in the northern portion. The other genera extend across the continent.

Group II.—**Desmorhines.**

In the genera constituting this group the beak is slender, and separated from the head by a sharply defined transverse line or constriction. In our genera the claws are connate at base, but as this character is not mentioned in the European genus Sharpia (Tournier, Ann. Ent. Belg. xvii. 84), and is somewhat variable in Smicronyx, we do not know that it is properly of group value. The mandibles are truncate at tip, and toothed both on the inner and outer edge as in Rhynchitidæ. The prosternum is emarginate in front, and the ventral sutures are very slightly curved at the sides. The antennal grooves descend obliquely and are almost confluent behind.

	Antennæ with first and second joints of funicle elongated.	2.
	Antennæ with second joint of funicle scarcely longer than third.	3.
2.	Antennæ slender, club small, oval.	**Desmoris.**
	Antennæ stouter, club larger, elongate oval.	**Barytychius.**
3.	Claws small, frequently connate nearly to the tip.	**Smicronyx.**

By an error of determination Pachytychius was used in our work on Rhychophora instead of Barytychius. The former genus is unknown in our fauna, and has a distinct scutel.

Desmoris is found in Kansas; Barytychius and Smicronyx on both sides of the continent.

Group III.—**Eugnomini.**

Following the example of Lacordaire, we recognize as a distinct group a small number of genera which are closely related

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belongs to Elleschus. *Erirhinus juniperinus* Sanborn, is an Anthonomus. *Erirhinus lutulentus* and *rutilus* Boh., Sch. Curc. vii. 2d, 165 and 167 have not been identified.

to the Erirhini proper, and like them have the antennal grooves directed against the eyes; they differ in having the eyes larger and more prominent, and separated from the margin of the prothorax by the head being more or less prolonged behind. The head thus recalls the form already seen in Rhinomacer and Rhynchites, though otherwise there is no resemblance.

The two species known to us resemble in appearance small Dorytomus but the thighs are unarmed, and the second joint of the funicle of the antennæ is short.

They may be for the present referred to the genus Phyllotrox, though they differ from the description given by Lacordaire (Gen. Col. vi. 505), by the first ventral suture being well marked. One is Californian, the other from Florida.

Group IV.—**Cryptopli.**

In this group the body is densely clothed with scales, forming usually a shining crust; the beak is cylindrical and curved, not separated from the head by a transverse impression; the antennal grooves commence about one-third from the end, and run directly towards the eyes which are lateral, oval, transverse, coarsely granulated, and not approximate beneath. Funiculus of the antennæ in some genera 6-jointed; first joint long, the others short, increasing gradually in breadth, and sometimes passing insensibly into the club, which is rather large, oval, annulated, and pubescent. Prothorax with broad postocular lobes, front coxæ large, prominent, contiguous, prosternum transversely, very deeply impressed but not excavated in front of the coxæ, or deeply emarginate. The legs are not very slender, the thighs moderately clavate, the tibiæ sinuate on the inner side, as long as the thighs, truncate and mucronate at tip, with the articular surface terminal; the front tibiæ subserrate from the middle to the tip. Tarsi broad with the fourth joint short, variable in form (absent in the European Anoplus), third joint broad, deeply bilobed. Elytra with ten entire striæ.

Last joint of tarsi broad, claws distant.	2.
Last joint of tarsi narrow, with one claw.	**Brachybamus.**
Last joint of tarsi narrow, projecting, with two slender claws.	**Onychylis.**
Elytra slightly wider than the prothorax.	**Endalus.**
Elytra much wider than the prothorax.	**Tanysphyrus.**

Except one species of Eudalus, which extends to California, these species are confined to the Atlantic region. *Tanysphyrus lemnæ* occurs also in Europe.

Group V.—**Stenopelmi.**

The genus Stenopelmus is included by Lacordaire in his group *Storeides*, but it seems that the remarkable combination of characters requires that it should be received as a separate group, with the following definition:—

Body clothed with a dense crust of scales; beak short and broad, not longer than the head; antennal grooves very short. Antennæ inserted on the upper rather than the lateral surface, scape long, reaching to the back part of the eyes, which are round, and coarsely granulated; funiculus 7-jointed, first joint longer and stouter, remaining joints short, closely united; club oval, pointed, entirely pubescent, annulated. Prothorax obliquely truncate in front, without postocular lobes, longer on the disk than at the sides; prosternum extremely short, not emarginate in front. Elytra much wider than the prothorax, humeri nearly rectangular. Ventral segments, first, second, and fifth very large, third and fourth very short, last ventral suture slightly curved. Legs slender, thighs not toothed; tibiæ truncate at tip, very slightly mucronate; tarsi narrow, third joint not broader, slightly emarginate; fourth joint as long as the two preceding; claws slender, divergent.

This group diverges towards Prionomerus in the form of the head and antennæ, but otherwise has no resemblance to that genus.

Stenopelmus extends from the Atlantic to the Pacific region.

Group VI.—**Brachypi.**

The genus Brachypus is placed by Lacordaire in his group Erirhinides; it differs from the other genera of that division by the narrow linear form. Though the three species described below do not exactly agree with the generic description given by Schönherr and Lacordaire, we think that they accord sufficiently to indicate the propriety of associating them together as a special group.

As here established, the Brachypi are nearly related to Hydronomi, but differ by the third joint of the tarsi being more or less bilobed, and the hind tibiæ truncate at tip, not unguiculate, but only feebly mucronate, with the articular surface terminal. The tarsi are either broad or narrow, the third joint sometimes but slightly dilated, and the last joint long, with large divergent claws. The body is narrow, covered with a dense water-proof crust of scales, as in Cryptopli and Hydronomi. The beak is straight, cylindrical, moderately stout, and as long as the prothorax; the antennal grooves run directly to the eyes and converge but slightly behind; they commence at a varying distance from the mouth. The antennæ are slender; funicle 7-jointed, first and second joints elongated in our genera, 3–7 gradually broader, club oblong-oval, annulated, entirely covered with sensitive surface. Prothorax with large postocular lobes, prosternum deeply emarginate beneath, not excavated. Legs long, slender, thighs moderately clavate, front and middle tibiæ slightly sinuate, all are very feebly mucronate at tip; tarsi with 3d joint broad, deeply bilobed in Anchodemus, narrow, slightly emarginate in Lixellus.

Tibiæ not serrate on the inner side.	**Anchodemus.**
Front and middle tibiæ serrate.	**Lixellus.**

The species have been found in the Atlantic region, but Lixellus extends to Nevada. They have a general resemblance to the European genus Lyprus, which, however, has strongly unguiculate tibiæ and nearly filiform tarsi.

Group VII.—**Hydronomi.**

The same varnish-like covering noticed in the three preceding groups is retained in this, the species of which are also found on plants near water. They are easily distinguished by the longer and more slender legs, the tibiæ curved, and frequently serrate on the inner side and strongly hooked at tip. The tarsi are usually slender, the third joint frequently not dilated, and the last joint moderate or very long, with stout, simple, divergent claws. The prosternum is usually broadly sulcate.

Our genera may be tabulated as follows:—

	Club of antennæ entirely sensitive.	2.
	Club of antennæ partly smooth and shining; prosternum not excavated.	**Lissorhoptus.**
2.	Prothorax feebly constricted in front.	**Bagous.**
	Prothorax very strongly constricted in front.	**Pnigodes.**

Except one species of Bagous from California, these species all belong to the Atlantic region.

Group VIII.—**Phycocœtes.**

This group is established upon one small species, *Phycocœtes testaceus*, of pale brown color, which lives under sea-weed cast up by the waves at San Diego, California. It differs greatly from all the other members of the tribe, by the front coxæ which are not absolutely contiguous, but separated by a very narrow lamina of prosternum, and by the very short metasternum, only one-third the length of the first ventral segment.

In color, form, and sculpture it resembles Emphyastes, but differs from that genus by such strong structural characters, that we cannot venture to place them together in one tribe.

Body clothed with very sparse pubescence. Beak cylindrical, slightly curved, as long as the prothorax, not very slender, mandibles of normal form; antennal grooves commencing near the tip, extending to the eyes, which are small, rounded, and coarsely granulated; front continuous with the beak. Antennæ with scape extending to the eyes, funicle 7-jointed, first joint stouter and longer, second nearly as long as the first, 3–6 rounded, seventh transverse, rounded; club rather small, oval, annulated, pubescent. Prothorax oval, longer than wide, rounded on the sides, not constricted nor lobed in front. Elytra oval, a little wider than the prothorax, humeri rounded, not prominent, base feebly emarginate. Prosternum rather long in front of the coxæ, flattened, not sulcate; joining the posterior point, so as to slightly separate the front coxæ which are large and globose. Mesosternum declivous, rather widely separating the middle coxæ; side pieces with the episterna very large, and the epimera very small, extending along the margin of the elytra. Metasternum very short, side pieces very narrow, but distinct; hind coxæ oval, very widely separated, extending to the margin of the elytra. Ventral segments, first longer than the second, separated by a sinuous suture; third and fourth united equal to second; fifth shorter than second, rounded at tip. Legs moderate, thighs clavate; tibiæ slender, nearly straight, slightly mucronate at tip, hind pair truncate, but without corbels; tarsi rather short, spongy beneath; third joint broader, deeply bilobed; fourth as long as the two preceding with rather large diverging simple claws.

The generic and group characters are combined in the above description.

Tribe VI.—**TRACHODINI.**

The genus Trachodes, which occurs in Europe, Asia, and Alaska, differs sufficiently from all others in our fauna to merit being placed in a separate tribe. Lacordaire classed it with the Molytini, which however seems an unnatural grouping of genera agreeing only in convex body, short metasternum, and absence of wings. The beak is rather slender, as long as the prothorax; the antennæ are inserted a little before the middle (♀), or one-third from the end (♂), rather slender, the scape reaching the inferior margin of the eyes, which are nearly round, coarsely granulated, and somewhat removed from the prothorax; the funiculus is 7-jointed, first joint elongate and stout, second nearly as long, but slender, 3–7 short, slightly increasing in thickness; club rounded oval, about one-half longer than thick, annulated, pubescent, tip rather pointed. Prothorax scarcely lobed, but ciliate behind the eyes. Epimera of metathorax narrow, entirely covered by the elytra; hind coxæ rounded, widely separated, not attaining the elytral margin. Ventral segments, first and second, large, each as long as the metasternum, separated by a straight suture which is deeply impressed at the sides; third and fourth short, sutures straight; fifth as long as the two preceding united. Legs rather long, thighs pedunculated, not toothed; tibiæ slender, strongly hooked at tip; tarsi rather long, third joint wider, bilobed, last joint elongate, claws simple, slender, separate. Body rough with short erect bristles.

Three species of Trachodes are found from Alaska to Vancouver Island.

Tribe VII.—**OTIDOCEPHALINI.**

In all the preceding tribes the tarsal claws are simple, usually separate and divergent, rarely connate; in this, as in several of those which follow, they are toothed; the tooth, however, is broad and not very prominent, giving the form termed appendiculate. The species are easily known from those of other tribes by the prothorax being narrowed at base, and somewhat pedunculate. Several of them are shining black and glabrous, so that they resemble in appearance ants.

Mr. C. V. Riley, who has hatched several specimens of *Otidocephalus laevicollis* from the galls of *Cynips quercus-globulus*, informs us that they have a general resemblance to an apterous *Cynips*.

The other characters of the tribe and genus are as follows: Beak rather stout, straight, nearly as long as the prothorax, subcylindrical, not emarginate at tip; antennal grooves extending in front of the insertion of the antennæ, converging behind, directed below the eyes, which are distant from the prothorax, rounded, and finely granulated; mandibles of normal form, mentum and labial palpi small, gular peduncle narrow, long; antennæ inserted about one-third from the tip of the beak, scape long, slender, extending to the back part of the eyes; funicle 7-jointed; first joint stouter but only slightly longer than the second; 2–7 gradually a little wider, rounded; club oval pointed, pubescent, feebly annulated. Prothorax without postocular lobes; prosternum broad, short, not emarginate. Mesosternum very narrow between the coxæ, side pieces almost longitudinally divided. Metasternum long, side pieces very narrow. Ventral segments nearly equal, sutures straight, well marked, intercoxal process obtuse, moderately wide. Front coxæ rounded, prominent; middle coxæ rounded, not prominent; hind coxæ oval, not extending to the elytral margin. Legs rather long, thighs somewhat clavate, usually toothed; tibiæ truncate at tip, not mucronate; articular surface terminal; tarsi dilated, spongy beneath, third joint broader, bilobed; claws divergent, more or less toothed. Elytra elongate-oval, convex, rounded at tip, entirely concealing the pygidium.

Two genera occur in our fauna:—

Beak long and slender; mandibles thin; prosternum long. **Erodiscus.**
Beak shorter and stouter; mandibles thick; prosternum short. **Otidocephalus.**

Erodiscus is represented by one species in Florida, perhaps identical with one of the South American forms. Otidocephalus by several species in the Atlantic region and the interior, and one in California.

Tribe VIII.—MAGDALINI.

As the preceding tribe differs from all others with the front coxæ contiguous by the pedunculate prothorax, so does this differ by the hind angles being prominent, and more or less produced over the base of the elytra.

The beak is slender, cylindrical, as long as the prothorax; the antennal grooves reach the lower edge of the eyes which are rounded and distant from the prothorax. Antennæ inserted near the tip (♂), or about the middle of the beak ♀, slender, feebly geniculated; scape slender, slightly clavate, curved near the end, and usually attaining the eyes. Front coxæ contiguous, prominent; middle coxæ not widely separated; hind coxæ not very distant, small, oval, not extending to the elytral margin. Side pieces of mesothorax rather large, obliquely divided. Metasternum long, episterna rather wide; epimera visible behind, ventral segments unequal, first and second long, connate, with a faint undulated suture; intercoxal process acute; segments 3–5 short, equal. Elytra oblong, not convex, widely separated at base by the scutellum, separately rounded at tip, exposing part of the pygidium. Legs moderate, thighs not clavate, sometimes toothed, tibiæ strongly unguiculate at tip; tarsi spongy beneath, third joint broader, bilobed; claws sometimes simple, sometimes toothed.

Magdalis extends across the continent.

Tribe IX.—**ANTHONOMINI.**

This tribe is represented by a large number of species of small size, and contains but few genera.

They may be distinguished by the following assemblage of characters:—

Mandibles normal in form, gular peduncle long, mentum and ligular small. Beak long, slender, cylindrical; antennal grooves extending to the lower edge of the eyes, which are small, convex, rounded, and distant from the prothorax, widely separated above, except in Orchestes, and a few species of Anthonomus. Antennæ inserted far from the tip of the beak, slender, scape long, funicle 6- or 7-jointed; club elongate-oval, pointed, entirely pubescent, and sensitive, very distinctly annulated, sometimes almost articulated or divided into separate joints. Prothorax without postocular lobes, prosternum very short, not emarginate in front, coxæ contiguous, prominent. Mesosternum separating moderately the coxæ; side pieces diagonally divided. Metasternum moderately long, side pieces narrow, ventral segments separated by deep straight sutures, usually nearly equal; third and fourth segments short in Elleschus; legs rather long; thighs frequently clavate and toothed; front and middle tibiæ with terminal hooks; hind tibiæ mucronate at tip, articular surface apical, and not lateral. Tarsi spongy beneath, third joint broad, bilobed, claws cleft, toothed, or appendiculate. The elytra are separately rounded at tip, so as to expose a portion of the pygidium in most of the species, but conjointly rounded in Macrorhoptus and Elleschus; this exposure of the pygidium is however so slight in some species that it is evidently a character of no importance.

Prosternum long in front of the coxæ. 2.
Prosternum short, broadly emarginate. 3.
2. Claws simple; pygidium slightly exposed. **Acalyptus.**
Pygidium more or less exposed; claws toothed. 3.
Pygidium entirely covered. 5.
3. Pygidium and last ventral of ♂ normal. 4.
Pygidium of ♂ perpendicular, last ventral short, emarginate. **Coccotorus.**
4. Eyes rounded distant, hind thighs normal. **Anthonomus.**
Eyes approximate above, hind thighs thickened. **Orchestes.**
5. Ventral segments nearly equal; claws toothed. **Macrorhoptus.**
Ventral segments very unequal; claws appendiculate. **Elleschus.**

Coccotorus has one species in the Atlantic region; the other genera extend across the continent. *Alyca* Lec. is the same as Elleschus.

Tribe X.—PRIONOMERINI.

This tribe contains a few small species of robust form, easily known by the following assemblage of characters:—

Beak stout, sometimes short and flat: antennæ inserted about the middle, scape extending upon the eyes which are large and rounded; funicle 7-jointed, club very large, pubescent, oval-pointed, almost articulated. Prothorax without postocular lobes, front coxæ contiguous; prosternum short, not emarginate.

Ventral sutures deeply impressed; the first is straight, the others strongly angulated at the sides; fifth segment scarcely longer than the fourth. Legs stout, tibiæ with a slender terminal hook; tarsi dilated, spongy beneath; third joint bilobed, claws appendiculate. Pygidium more or less visible.

Beak as long as prothorax, subcylindrical; long; front thighs with a large serrated tooth. **Prionomerus.**
Beak short, broad, and flat; thighs with a small acute tooth. **Piazorhinus.**

One species of Prionomerus and two of Piazorhinus are found in the Atlantic States.

Tribe XI.—TYCHIINI.

In this tribe a form of body is resumed, which resembles that of the Erirhinini. The claws, however, are not simple, but appendiculate or toothed, and the second, third, and fourth ventral sutures are not straight, but strongly angulated at the sides. The prolongation backwards of the side angles of the second segment is in some genera carried to such an extent that the points reach the fourth segment, and the sides of the third segment are thus entirely covered. The pygidium is usually exposed by the tips of the elytra being separately rounded, but in Tychius they are conjointly rounded, and the pygidium is covered. This character, as in Anthonomini, possesses, therefore, but little value. The ventral segments are less unequal than in Erirhinini.

The other characters are those common to the preceding tribes: Beak long and usually slender; antennæ inserted far from the tip; antennal grooves directed sometimes against the eyes, sometimes below them. The eyes are rounded or nearly so, not finely granulated. The funicle of the antennæ is 6- or 7-jointed, and the club entirely pubescent and annulated. The prothorax has no postocular lobes; the prosternum is short, not strongly emarginate in front, and the coxæ are contiguous. The side pieces of the mesothorax are diagonally divided, and the epimera do not largely attain the base of the prothorax. The metasternum is long, and the side pieces are narrow, or moderately wide, dilated in front. Tibiæ feebly or strongly mucronate; articular surface prolonged on the outer face, so as to become oblique.

Our genera are as follows :—

	Angles of second ventral segment not extending to the fourth.	2.
	Angles of second ventral segment extending to the fourth.	5.
2.	Claws broadly appendiculate.	3.
	Claws toothed.	4.
3.	Beak stout; venter of ♂ with acute processes.	**Proctorus.**
	Beak slender; venter of ♂ unarmed.	**Encalus.**
4.	Beak slender; fourth ventral suture indistinct.	**Thysanocnemis.**
	Beak stout, carinate.	**Plocetes.**
5.	Elytra not tuberculate.	6.
	Elytra tuberculate.	**Tylopterus.**

6. Tips of elytra conjointly rounded.	**Tychius.**
Tips of elytra separately rounded.	7.
7. Claws toothed.	**Sibynes.**
Claws simplex.	**Paragoges.**

Sibynes and Paragoges occur in California, Tychius in both regions; the other genera are confined to the Atlantic region.

Tribe XII.—**CIONINI.**

In this tribe the funicle of the antennæ has but five joints; the club is either articulated or annulated. The front coxæ are very large and prominent, contiguous in some of the genera, separate in others; the claws are simple, approximate, free in Miarus, but connate in the other genera.

The form is robust, the beak cylindrical; antennæ inserted at about two-thirds the length; the scape attains the anterior margin of the eyes, which are oval, transverse and moderate in size, and widely separated above and below. The front coxæ are large, and the sternum is short both before and behind; the middle and hind coxæ are separated, the side pieces of the metasternum narrow, and the margin of the elytra not sinuate; the side pieces of the mesosternum do not intervene between the base of the prothorax and the elytra. The ventral segments are not very unequal in length, though the third and fourth are a little shorter; the sutures are deep and angulated in the first two genera, but only slightly curved in Gymnetron and Miarus.

The species in our fauna indicate four genera:—

Pygidium covered.	2.
Pygidium exposed, antennal club annulated.	3.
2. Antennal club articulated.	**Nanophyes.**
Antennal club annulated.	**Cionus.**
3. Front coxæ contiguous.	**Gymnetron.**
Front coxæ separate.	**Miarus.**

With the exception of one species of Miarus from the Atlantic region, these genera are represented by single European species, which occur in the Atlantic States.

Tribe XIII.—**TRYPETINI.**

This tribe contains a few rather elongate, depressed, glabrous species, with cylindrical beak, less slender in the male than in the female, with the antennæ of usual form, inserted near the mouth in the former, and at the middle in the latter sex; scrobes at the sides of the beak; funicle 7-jointed. Prothorax wide, narrowed in front, rounded at the sides; prosternum wide between the coxæ, flat, in the same plane as the meso- and metasternum. Scutel distinct. Pygidium covered by the elytra. Side pieces of mesosternum not interposed between the elytra and base of prothorax. Legs short, front coxæ widely separated; front thighs stout, armed with a tooth beneath; tibiæ unguiculate at tip; claws simple, divergent. Metasternum long, side pieces moderately wide. Ventral sutures straight, 1st and 2d segments very long, connate.

One species of Nanus from Florida represents this tribe in our fauna. It nearly resembles the West Indian *N. uniformis*, but differs in being more shining. The genus greatly resembles in appearance a depressed Cossonus, in which family it was placed by Wollaston, under the name Homaloxenus, and so recorded in the Rhynchophora of America north of Mexico (p. 338). The deceptive appearance is increased by the prothorax having two faint longitudinal impressions, in which the punctures are larger.

It seems to be related in diverse directions, with the Erirhinini, Derelomini, and elongate species of Centrinus.

Tribe XIV.—**DERELOMINI.**

A tribe which contains a few small species of oblong elongate form, glabrous, and feebly punctured, with the hind angles of the prothorax rectangular and better defined than usual. The beak is slender, long, cylindrical, and is usually projected forwards; it can, at most, be bent perpendicularly downwards in repose; the antennal grooves descend obliquely to the lower edge of the eyes, which are moderate in size, nearly round, coarsely granulated and distant from the prothorax. The antennæ, inserted one-fourth from the tip, are slender, the scape reaches the eyes; the funicle is 7-jointed; first joint stouter, and as long as the two following united; the second and the succeeding ones become slightly broader, rather closely connected and merge into the club, which is pubescent, elongate, pointed, and strongly annulated. The prothorax is quadrate for the greater part, then suddenly narrowed to the tip, which is constricted; near the tip there is a short, acute oblique lateral ridge representing a part of what is the lateral margin of the pronotum in other Coleoptera. The prosternum is very long in front of the coxæ, which are nearly contiguous in our species, though distinctly separated in the foreign genera; it is not emarginate in front, and the prosternal sutures are obliterated. The elytra are scarcely wider than the prothorax, parallel on the sides, conjointly rounded behind, so as to cover the pygidium; the surface is punctulate, and the striæ are obsolete. The middle coxæ are moderately separated; the side pieces are diagonally divided, and the epimera attain widely the base of the prothorax beneath, though they do not intervene between the elytra and the pronotum. Metasternum moderately long, side pieces narrow, wider in front. First, second, and fifth ventral segments long; third and fourth united about equal to each of them; surface rather flat, sutures fine and well impressed, nearly straight; second suture slightly curved at the sides; in the ♂ the anal segment is slightly visible at the tip of the fifth ventral. Legs rather stout, thighs compressed, not toothed; tibiæ truncate at tip, not mucronate; tarsi spongy beneath; third joint broad, deeply bilobed; claws divergent, broadly toothed in our species; simple in the foreign genera.

While having a slight relation with the Magdalini and Anthonomini this tribe adds to the characters it has in common with them and other tribes, one peculiar to itself; the prosternum very long in front of the coxæ. The space between the front coxæ is almost imperceptible in our two species, but as the descriptions of the foreign genera mention them as moderately distant, we infer that that character, as well as the form of the claws, must be regarded of small value in this tribe.

Three species of Notolomus, two on Chamærops palmetto and one on Myrica, in Florida, represent this tribe.

Tribe XV.—**LÆMOSACCINI.**

This tribe is composed of a single genus Læmosaccus, of which one species occurs in our fauna. It is easily known by the exposed pygidium; the large, prominent, and distant front coxæ, and the breast not channelled. The side pieces of the mesothorax are very transverse, and intervene somewhat between the prothorax and elytra; the episterna of metathorax are wide, and the epimera are visible behind. The ventral sutures are straight; first and second segments equal, longer than the third and fourth. The legs are stout and short, and the tibiæ are strongly hooked at tip; the tarsi are dilated, and the last joint is very slender, with two very small, simple claws.

The beak is short, stout, and cylindrical; the antennal grooves extend to the lower margin of the eyes, which are oval and transverse. The antennæ are inserted about the middle, and are scarcely geniculated; the funicle consists of seven joints and merges gradually into the oval, annulated, pubescent club. There is nothing peculiar in the mouth; the gular peduncle is long, the mentum small, and the palpi short and small; the mandibles are curved, and of the usual form.

The affinities of this tribe seem to be in the direction of Barini.

Læmosaccus plagiatus, from the Atlantic region, is the only representative in our fauna.

Tribe XVI.—**CRYPTORHYNCHINI.**

This tribe contains a large number of genera, which differ so much in appearance and details of structure, that scarcely anything can be predicated of all. It may, however, be stated in general terms, that while in common with several other tribes, the beak is received upon the sternum, and lies in repose in a pectoral groove, this tribe differs from Zygopini in the smaller size and different position of the eyes, which are more or less covered by the prothoracic lobes; and from Ceutorhynchini by the pygidium being entirely covered.

The pectoral groove varies in length according to the group; the front coxæ are contiguous in many species of Conotrachelus, and other genera of the group Ithypori. The side pieces of the mesothorax are obliquely divided, and the epimera attain largely the base of the prothorax on the under surface, without intervening between the pronotum and the elytra. The metasternum is either long or short; the side pieces narrow, and dilated in front, except in some genera of Cryptorhynchi. The ventral segments vary in length; the first suture is straight or sinuate, deep or obliterated; the second and third are somewhat angulated at the sides. The tibiæ are armed with a strong hook at the tip, and the articular surface is oblique; the claws are simple or toothed.

But three groups are represented in our fauna, of which the second is established upon a new genus:—

Pectoral groove confined to the prosternum, open behind;	
Beak long, tarsi dilated.	ITHYPORI.
Beak short, tarsi narrow.	ACAMPTI.
Pectoral groove extending into the mesosternum, sharply limited behind.	CRYPTORHYNCHI.

Group I.—**Ithypori.**

In this group the pectoral groove is confined to the prosternum, and is not closed behind; the mesosternum is sometimes flat, sometimes suddenly declivous. The eyes are coarsely granulated, partly covered in repose by the prothoracic lobes, which are sometimes very well developed, but in other genera are broad and not prominent.

The prothorax is, in most species, comparatively smaller than in the other groups, and usually very coarsely sculptured. The elytra are wider than the prothorax, with prominent humeri, the outer stria is usually abbreviated, and there is a tendency to an epipleural fold. The thighs are toothed in our genera; the tibiæ slender, hooked at the tip; the claws usually toothed, though sometimes simple or even connate at the base.

The front coxæ are sometimes contiguous, a character not observed in the other groups of this tribe.

Postocular lobes broad, not prominent.	2.
Postocular lobes prominent, front coxæ contiguous; claws toothed, sometimes cleft.	**Conotrachelus.**
2. Claws slender, simple.	3.
Claws approximate, toothed.	**Rhyssematus.**
Claws approximate, connate at base.	**Chalcodermus.**
3. Elytra at base not wider than prothorax.	**Zaglyptus.**
Elytra at base much wider.	**Microhyus.**

With the exception of one Californian Rhyssematus, these species all belong to the Atlantic region.

Group II.—**Acampti.**

As Camptorhinus differs from the Cryptorhynchi by the pectoral groove being confined to the prosternum, though distinctly limited behind, so is the singular insect which constitutes this group similarly separated from the Ithypori, by the shorter beak resting upon the front coxæ. The body is elongate, as in Camptorhinus, and the tibiæ are stout, sinuate on the inner side, and strongly hooked at the tip. The other characters are peculiar;

the tarsi are not dilated nor spongy beneath, and the club of the antennæ is pubescent and sensitive only near the tip.

These characters indicate relationships in various directions, such as the Byrsopidæ and Cossonidæ, but the insect preserves unchanged all the essential characters of the Cryptorhynch type of Curculionidæ.

Acamptus rigidus, from the Southern and Western States, is the only representative.

Group III.—**Cryptorhynchi.**

In this group the pectoral groove is distinctly limited behind. The other characters are variable, though the front coxæ are never contiguous as in some Ithypori; a slight appearance of an epipleural fold exists in many species. The claws are toothed in Phyrdenus, but simple, and generally small in the other genera.

The genera in our fauna are not numerous, but present several categories indicating sub-groups, which it is unnecessary to define at present, as their number would be increased by a careful study of exotic forms. Micromastus might be placed with equal propriety in Ithypori, near Arthrostenus, but for the present we prefer associating it with Acalles: the only specimen in our collection is much broken.

	Metathoracic epimera indistinct.	2.
	Metathoracic epimera distinct.	7.
2.	Metasternum very short, humeri rounded.	3.
	Metasternum as long as first ventral segment.	6.
3.	Club of antennæ annulated.	4.
	Club of antennæ solid.	**Eurhoptus.**
4.	First and second ventral connate, suture distinct, deeply impressed; eyes coarsely granulated.	5.
	Suture between first and second ventral obliterated; third and fourth very short; prothorax prolonged over the head; eyes finely granulated, nearly covered in repose.	**Lembodes.**
5.	First and second ventrals longer.	**Micromastus.**
	First ventral longer, 2–4 equal; claws very small, approximate.	**Acalles.**
6.	First ventral longer, 2–4 short, equal; claws slender, divergent, rarely approximate.	**Pseudomus.**
7.	Tibiæ slender, more or less sinuate.	8.
	Tibiæ strongly compressed.	11.
8.	Mesosternum deeply emarginate.	9.
	Mesosternum feebly emarginate.	**Tyloderma.**

9.	Claws simple, divergent.	10.
	Claws appendiculate, divergent.	**Phyrdenus.**
10.	Ventral segments 2–4 equal, sutures straight.	**Cryptorhynchus.**
	Second ventral segment longer than 3d or 4th; 1st suture curved.	**Macromerus.**
11.	Tibiæ not serrate.	12.
	Tibiæ more or less serrate.	**Zascelis.**
12.	First ventral suture deep.	**Cœlosternus.**
	First ventral suture sinuate, faint at the middle.	**Baropsis.**

Micromastus, one Tyloderma, Zascelis, and Cœlosternus, from California, with one species of Acalles in Arizona, are the only representatives on the Pacific slope of this large group. The others occur in the interior district, Texas, and the Atlantic States.

Tribe XVII.—**ZYGOPINI.**

The form of these insects is quite peculiar; the body is elongate, subrhomboidal, the first and second ventral segments long, the remaining ones short, rarely horizontal, as in the preceding genera, but forming an obliquely ascending surface. The pygidium is concealed by the elytra in our species, but is visible in some foreign genera. The eyes are large, and not concealed, even when the head is deflexed; they are closely approximate on the front, but widely distant beneath and finely granulated. The beak is long and slender, only slightly curved, and is received in a deep prosternal canal, which in some species does not extend upon the mesosternum, so that the end of the beak is free, as in Conotrachelus; even when, as in others, the mesosternum is excavated, the canal is open and not sharply limited behind. Legs slender, front coxæ elongated, and prolonged into a point on the inner side, claws simple, divergent.

Our species are of small size, and represent four genera:—

	Pygidium covered by the elytra.	2.
	Pygidium exposed.	**Zygops.**
2.	Mesosternum declivous.	3.
	Mesosternum excavated.	**Piazurus.**
3.	Ventral surface obliquely ascending.'	**Copturus.**
	Ventral surface nearly horizontal.	**Acoptus.**

Zygops is represented by one species in Arizona, probably the same as some Mexican species. The other genera occur on both sides of the continent.

Tribe XVIII.—**TACHYGONINI.**

This tribe contains a few small species, which in form and characters are among the strangest insects of the family. The body is broadly ovate, rather depressed above, and ornamented with tufts of hair; the prothorax is comparatively small, much narrowed in front. The head is small, the eyes large, and the front very narrow, as in Zygopini; the beak is rather short and stout, as in certain Ceutorhynchini, and retracted upon the prosternum, but the antennæ are straight, inserted near the base of the beak, not geniculate, and the first joint (scape) is no longer than the second; this is followed by five short joints, gradually increasing in width; the club is elongate-oval, distinctly annulated. The front coxæ are subconical, prominent, and widely separated, so as to leave a space in which the beak rests when retracted. The middle coxæ are about three times more separated than the front coxæ, and the mesosternum is very short, transverse, and perpendicular to the general surface of the metasternum, which is still wider. The side pieces of the mesosternum are large and distinct, those of the metasternum are narrow. The hind coxæ are oval, more widely separated than in any other tribe known to us, and near the side margin of the elytra. The first and second ventral segments are very large and connate; the third and fourth very short; the fifth is nearly as long as the second, rounded behind. The pygidium is exposed, and suddenly declivous at tip, presenting the appearance of an anal segment in both sexes. The front and middle legs are slender and moderate in length, the tibiæ armed with a terminal hook; the third joint of the tarsi is very widely dilated, the fourth joint as long as the first, with divaricate and appendiculate ungues. The hind legs are much longer and stouter, so as to clasp the leaves upon which the insect rests.

The geographical distribution is remarkable; a few species of Tachygonus in America; one species of Dinorhopala in Birmah. This fact, and the extraordinary characters above detailed, indicate the preservation of an ancient form, which, although having the affinities mentioned, is equally out of place in any position in a linear arrangement.

Four species of Tachygonus are found in the southern and interior parts of the Atlantic region.

Tribe XIX.—CEUTORHYNCHINI.

This numerous tribe consists of small species of broad form, with the beak and pectoral groove varying according to genus. They are distinguished from all the preceding tribes with distant front coxæ, by the pygidium being perpendicularly deflexed, and marked with a deep excavation (Mononychus), or with a continuation of the acute lateral margin of the ventral segments, against which the apical margin of the elytra rests. In the latter case, the upper part of the dorsal segment is finely carinate; in both cases, the anal segment of the ♂ extends in front of the excavation or transverse line. In all the genera the coriaceous sutural margin of the left elytron is much wider than in any genera of the Cryptorhynchoid series, including Zygopini.

The antennæ are geniculate as usual, inserted about the middle of the beak; the funicle is 6–7 jointed, and the club pointed oval, pubescent, and annulated. The side pieces of the mesosternum are usually visible from above.

They may be divided into four groups, the first of which indicates more properly a sub-tribe.

A. Pygidium without transverse line for reception of tip of elytra; pectoral groove extending upon the metasternum. MONONYCHI.
B. Pygidium with line for reception of tip of elytra, and carinate in front of the line;
  Pectoral groove extending behind the prosternum. CŒLIODES.
  Pectoral groove anterior, sometimes effaced;
    Beak long and slender. CEUTORHYNCHI.
    Beak stout, usually short. PHYTOBII.

Group I.—Mononychi.

A single genus constitutes this tribe. The species are of broad form, and larger than any others in the tribe, and are easily distinguished by the pygidium not being carinate in front, and with no transverse line for the reception of the tip of the elytra; the declivous exposed portion is, however, gibbous at the upper part, surrounded with an impression, distinctly margined in the male; in the female there is a small, very deep excavation, surrounded by a thickened margin. The eyes are partially covered when the head is deflexed, and the beak, which is long and cylindrical, rests in a deep groove extending through the pro- and mesosternum, into the metasternum, where it is sharply limited. The side pieces of the meso- and metasternum are very large. The ventral sutures are curved at the sides; the first segment is as long as the metasternum, the second is shorter, third and fourth together equal to the second; fifth nearly as long as the first, truncate, and impressed in the male. Legs slender, thighs slightly clubbed, tibiæ obliquely fringed at the tip, terminal hook very small at the inner angle. Tarsi with the third joint very broad, bilobed; fourth joint small, with a single claw.

Mononychus vulpeculus, in the Atlantic States, is our sole representative.

Group II.—**Cœliodes.**

In the species of this group the eyes are partially covered by postocular lobes, when the head is deflexed, and the pectoral groove extends into or beyond the mesosternum, the beak is long and cylindrical. The side pieces of the meso- and metasternum are large and wide. The ventral sutures are curved, and the first is as deeply impressed as the others; the second segment is shorter than the first; third and fourth still shorter, fifth nearly as long as the first. The pygidium is perpendicularly deflexed, marked with an elevated angulated line for the reception of the tips of the elytra, in front of which it is carinated. The third joint of the tarsi is very broad and bilobed, the fourth is as long as the first, with two claws, which are cleft or toothed.

The following genera are represented in our fauna:—

	Tibiæ flattened, toothed on the outer side.	2.
	Tibiæ slender, not dilated nor grooved.	3.
2.	Pectoral groove extending to the metasternum.	**Craponius.**
	Pectoral groove not extending to the metasternum.	**Cnemogonus.**
3.	Body broadly ovate, elytra suddenly wider.	**Cœliodes.**
	Body pyriform, elytra gradually wider.	**Acallodes.**

None of the species have been found on the Pacific slope.

Group III.—**Ceutorhynchi.**

The species of this group are small, and of the broad ovate form usual in the tribe. They differ from the preceding group by the pectoral groove not extending behind the front coxæ, and from the next group by the beak being long, slender, and curved; usually about half the length of the body The eyes are small, not prominent, and are partially concealed in repose by broad prothoracic lobes. The prosternum is suddenly and very deeply emarginate in front, and the antecoxal ridges defining the pectoral groove are acute and elevated in all our species.

The beak is stouter and more coarsely sculptured in ♂, and the last ventral segment is impressed. The species in our fauna are not very numerous, and, with the exception of *Rhytidosomus orobinus* Schiödte, from Greenland, which is unknown to us, all belong to Ceutorhynchus, and occur on both sides of the continent; some European species with 6-jointed funicle have been separated under the name Ceutorhynchidius, but we see nothing in our species sufficient to warrant the adoption of such a division. Rhytidosomus differs from Ceutorhynchus chiefly by the subglobose elytra; the funicle is 6-jointed.

Group IV.—**Phytobii.**

The species of this group differ from the Ceutorhynchi only by the beak being stout, and usually short, in one instance scarcely as long as the prothorax. The prothoracic lobes are feeble or wanting, the eyes are sometimes partially covered in repose, sometimes entirely free. The pectoral groove is sometimes well defined by antecoxal ridges on the prosternum, but occasionally these are absent. The first genus exhibits a very singular reversion towards the Bagous group, with which it might indeed be placed, were it not that the pygidium is exposed and similar in sculpture to that of the other members of the present tribe, and, also, that other characters correspond with the position here assigned to it.

The genera are somewhat difficult to define, in consequence of the important structural characters by which the species are distinguished. It is probable that they will be increased in future, by those whose views tend to the multiplication of genera, but for the present, the divisions here adopted express both conveniently and naturally the affinities of the species known to us.

Tarsi with the third joint dilated, bilobed.	2.
Tarsi slender, long, not dilated.	**Phytobius.**
2. Prosternum with acute antecoxal ridges.	3.
Prosternum without acute antecoxal ridges.	**Pelenomus.**
3. Eyes with acutely elevated orbits.	**Cœlogaster.**
Eyes without acutely elevated orbits.	**Rhinoncus.**

Phytobius is represented in the Atlantic region by *P. vèlatus*, which occurs also in Europe; Cœlogaster is at present confined to the Atlantic region; the other two genera are represented on both sides of the continent.

Tribe XX.—**BARINI.**

An important type of Curculionidæ, containing numerous genera and groups, of which only a few are represented in our fauna. It is in this tribe that the nearest approach to Calandridæ and Cossonidæ is made, in form and general appearance, though the family characters are quite different.

The following characters will enable them to be distinguished from the other tribes in which the front coxæ are separate.

Beak not received closely upon the sternum, which, however, is sometimes broadly sulcate in front of the anterior coxæ; when this groove does not exist, there are sometimes seen (Madarus) two short approximate ridges, limited inwards by an impressed line, which may be regarded as the last remnant of the pectoral groove. In other cases (*Baris striata*) even these lines disappear, and the merest trace of a concavity remains in the apical constriction of the prothorax, which in all the species is not emarginate beneath, and is destitute of postocular lobes. In many others even this slight concavity or flattening is wanting, and the apical part of the prothorax is altogether cylindrical above and beneath. The meso- and metasternum are closely united, and the suture between them is frequently obliterated. The side pieces of the mesothorax are so extended outwards and upwards, that they intervene strongly between the base of the prothorax and the elytra. The sides of the latter, therefore, become obliquely truncated, giving a form not observed in any of the preceding tribes. The other characters are somewhat variable. The pygidium is sometimes exposed, sometimes covered. The claws are simple, and either divergent, connate, or even (Barilepton, Eisonyx) single.

The genera in our fauna represent two groups:—

Pygidium exposed, usually vertical; fifth ventral segment in the latter case truncate or subemarginate. BARIDES.

Pygidium oblique or horizontal, not fully exposed; fifth ventral segment rounded at tip. CENTRINI.

Group I.—**Barides.**

The separation between this group and the Centrini is not very definite, though characters such as the perpendicular pygidium, and the shorter and stouter beak, seen in most of the species, do not occur in the last-named group. The main character to be relied on, in the absence of the easily recognized habitus, is that the elytra are more broadly separately rounded at tip, and the pygidium thus becomes more exposed.

Pygidium oblique; fifth ventral segment longer, rounded at tip; outer joints of funicle but little broader, club large, elongate-oval, pubescent. 2.
Pygidium vertical; fifth ventral segment shorter, subtruncate. 3.
2. Beak long, slender, straight. **Orthoris.**
Beak shorter, less slender, curved. **Rhoptobaris.**
3. Club annulated, entirely pubescent. 4.
Club with first joint larger, shining, claws divergent. **Baris.**
4. Claws approximate, frequently connate. 5.
Claws divergent, larger, last joint of tarsi longer than usual. 7.
5. Front coxæ widely distant, body nearly glabrous. 6.
Front coxæ not widely distant, body densely scaly. **Trichobaris.**
6. Prothorax strongly constricted near the tip. 8.
Prothorax feebly constricted near the tip. **Pseudobaris.**
7. Second joint of funicle not longer than third. **Onychobaris**
Second joint of funicle longer. **Aulobaris.**
8. Front thighs not toothed. **Ampeloglypter.**
Front thighs obtusely toothed. **Madarus.**

Orthoris Crotchii is found from New Mexico to California; Pseudobaris, Ampeloglypter, and Madarus belong to the Atlantic region; *Rhoptobaris canescens* occurs in Colorado. The other genera extend from the Atlantic to the Pacific.

Group II.—**Centrini.**

The only characters we can give for the recognition of this group, as distinguished from Barides, are: the elytra conjointly rounded at tip, or nearly so; the pygidium thus becomes entirely covered, or only partly exposed, and is nearly horizontal, or at most somewhat oblique, and never vertical. The last ventral is consequently regularly rounded at tip, never truncate or emarginate. In addition to these characters the ventral surface of the abdomen is more convex, frequently ascends obliquely, as in Zygopini, but in a much less degree. The tibial hooks are less developed than in Baris and its allies, and in many species are scarcely apparent. The beak and antennæ are generally of more slender form than in Baris, but these characters are not without exceptions.

A.	Body without erect bristles;	
	Tibiæ stout, with longitudinal grooves (as in Baris).	2.
	Tibiæ slender, not grooved.	4.
2.	Claws two, separate.	3.
	Tarsi with a single claw.	**Eisonyx.**
3.	Pectoral groove shallow, indefinite.	**Pachybaris.**
	Pectoral groove deep, sharply defined.	**Stethobaris.**
4.	Side margin of prothorax as usual.	5.
	Side margin of prothorax well defined.	**Microcholus.**
5.	Third joint of tarsi broad, bilobed.	6.
	Third joint of tarsi narrow.	**Calandrinus.**
6.	Claws separate.	**Centrinus.**
	Claws connate at base.	**Zygobaris.**
	Claws single.	**Barilepton.**
B.	Body with stout erect bristles, intermixed with the dense covering of scales; tarsi narrow;	
	Bristles very long.	**Euchætes.**
	Bristles short.	**Plocamus.**

Excepting two species of Centrinus from California, all these species inhabit the Atlantic region from New England to Colorado and Texas.

Tribe XXI.—**HORMOPINI.**

The sub-family of genuine Curculioninæ fitly closes with a very anomalous insect, which while having relations with several of the earlier tribes, exhibits in addition a character which is otherwise seen in one of the sub-families of the Calandridæ. The eyes, namely, are very large, transverse, and coarsely granulated; they are widely separated above, but are nearly contiguous beneath. It follows from this that the antennæ in repose must be received in front of the eyes, which therefore form as it were a collar beneath; and the antennal grooves, which are deep and oblique, attaining the eyes near the upper end, are suddenly and acutely flexed beneath, forming a deep, transverse excavation in front of the eyes.

The beak is shorter than the prothorax, stout, somewhat flattened, a little wider at tip than base; the mandibles are rather flattened, acute at tip, toothed on the inner side. The gular peduncle is small and narrow, emarginate at tip; the mentum is nearly round, and the ligula and palpi are not prominent; maxillæ exposed. Antennæ inserted near the tip of the beak, geniculate, scape long, slender, slightly clavate, funicle somewhat stout, first joint long, clavate, equal to the four following; 2–7 short, outer ones a little wider, club small, oval, pubescent, annulated. Prothorax rounded at the sides and base, truncate in front, without postocular lobes; prosternum feebly emarginate beneath, front coxæ contiguous. Elytra oblong-oval, a little wider than the prothorax, humeri rounded, pygidium entirely covered; scutellum small, rounded. Mesosternum moderately wide, middle coxæ separated, side pieces diagonally divided, not ascending between the elytra and base of prothorax. Metasternum rather long, side pieces narrow; hind coxæ moderately separated. Ventral segments first and second longer, separated by a slightly arcuate distinct suture; third and fourth short, separated by straight sutures; fifth as long as third and fourth united, broadly rounded behind. Legs rather short, stout; thighs thick, not clavate, sinuate beneath near the tip, not toothed; tibiæ obliquely truncate at tip, with a small hook at the inner apical angle; tarsi two-thirds as long as the tibiæ, dilated, spongy beneath, third joint broad, bilobed; fourth joint not elongate, slender, with small, approximate claws, which are slightly connate at base.

Hormops abducens is the only representative known to us; it occurs in Florida, and is very rare.

Sub-Family VI.—BALANININÆ.

The single genus which constitutes this sub-family has been heretofore arranged as a tribe, in the vicinity of Anthonomini. It differs, however, from that tribe, as from all other Coleoptera, known to us by the movement of the mandibles being vertical instead of horizontal;* the mandibles are short, pyramidal and acute, and the condyle is on the upper side; the teeth seen in most Curculionidæ are wanting; the inner edge is more convexly curved than the outer, so that in the ordinary position, the points seem slightly divergent. In general appearance, as well as by the extension of the mesothoracic epimera, so as to give an oblique outline to the elytra near the base, this sub-family seems to approach Centrinus more than Anthonomus; the result of this obliquity is that the tenth elytral stria commences at the margin, opposite the anterior end of the metathoracic episterna, as in all Barini.

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* Horn, Proc. Amer. Phil. Soc., 1873, 457.

The beak attains in length and attenuation the greatest development: in the ♂ it is rarely shorter than the body; in the ♀ it is frequently twice the length, and is used to make the perforation into which the egg is subsequently introduced. The great thickness of the husks of the fruits (chestnuts, walnuts, hickory-nuts, etc.), depredated on by these insects, necessitates a very long perforating instrument to reach the kernel, upon which the larva feeds.

The mouth organs are small, the gular peduncle very long and narrow. The antennæ are inserted a little before the middle (♂), or behind the middle (♀) of the beak, and are very long and slender; the funicle is 7-jointed; the first joint is either longer or shorter than the second, and the outer joints are gradually a little less elongated; club elongate-oval, pointed, annulated, and pubescent. Eyes rather large, flat, nearly rounded, finely granulated. Prothorax rather long in front of the coxæ, which are contiguous; broadly emarginate in front, without postocular lobes; pronotum rapidly narrowed in front, sides rounded, base slightly bisinuate. Scutellum distinct. Elytra narrowed behind, tips separately rounded, pygidium more or less exposed. Side pieces of mesothorax attaining widely the base of the prothorax, and truncating the humeral outline of the elytra; metathoracic episterna narrow, dilated in front. First ventral segment longer than the second, and closely united with it; the others are nearly equal in length. Middle coxæ moderately distant, hind coxæ widely distant, not attaining the elytral margin. Legs long, thighs clavate and strongly toothed in our species; tibiæ slender, truncate at tip, not mucronate; tarsi dilated, claws divergent, toothed.

Balaninus extends across the continent.

Fam. LXXX.—**BRENTHIDAE.**

Mouth organs very different, according to genus and sex; maxillæ, ligula, and palpi concealed in the species of the first sub-family in our fauna by the mentum, which in the ♂ is transverse and concave, in the ♀ narrow and convex. Mandibles in ♂ curved, flattened, pointed, more or less toothed on the inner edge; in the ♀ stout, small, pincer-shaped, toothed on the apical edge. Maxillæ exposed in Cyladinæ in both sexes, mentum oblong, and supported on a short gular peduncle, which is wanting in true Brenthinæ; mandibles short, pincer-shaped.

Antennæ inserted in lateral foveæ at a greater or less distance in front of the eyes, according to genus and sex; not geniculate, 11-jointed in true Brenthinæ, 10-jointed in Cyladinæ; outer joints finely pubescent and sensitive; basal joint stouter and a little longer than the second.

Head elongated, constricted behind, except in Cylas; eyes rounded, small, not granulated; labrum wanting.

Prothorax very elongate, truncate before and behind, without trace of postocular lobes; turned into a peduncle behind, with a broad basal bead; prosternum very long in front of the coxæ; prosternal sutures entirely obliterated; coxæ separate in Brenthinæ, conical, prominent, and contiguous in Cylas; in both the median suture behind the coxæ is very evident.

Mesosternum moderately long, side pieces diagonally divided, epimera pointed in front, not attaining the base of the prothorax; coxæ rounded, separate (Brenthinæ), nearly contiguous (Cylas).

Metasternum very long, episterna narrow; hind coxæ transverse oval, separated.

Elytra elongate, covering entirely the pygidium, with a fold on the inner surface close to the margin, which commences near the base, diverges obliquely near the tip, and extends to the sutural edge in Brenthinæ, and nearly there in Cylas. Wings well developed.

Abdomen with five ventral segments, of which the first and second are very long, and united by an indistinct suture; third and fourth short, fifth a little longer, flat, rounded behind; sutures straight. Dorsal segments membranous, except the last, which is corneous; anal segment of ♂ rather large, rounded. The acute edge of the ventral segments and of the metathorax is prominent, and fits, as usual, into the elytral groove.

Legs not slender, moderate in length; thighs clavate, front tibiæ sinuate, and obliquely grooved on the inner side in Brenthinæ; armed with a hook on the outer tip, and a spine on the inner; middle and hind tibiæ truncate at tip, with two small fixed spurs. In Cylas the tibiæ are all slender, straight, and not mucronate at tip. Tarsi spongy pubescent beneath, with the third joint bilobed. Claws large, simple, and divergent, except in Cylas, where they are small and connate at base.

This highly specialized family is the last of those in which the male is provided with an additional dorsal segment. The mouth organs vary to a greater degree than they do in Curculionidæ, though usually the mentum is developed to such an extent as to conceal the ligula and labial palpi. Of the genera known to us Cylas is the only one in which the maxillæ are exposed by the mentum not filling completely the buccal cavity, though other cases are mentioned by Lacordaire.

But what is most curious, is that while the mandibles of the ♀ preserve the pincer-form seen in many Curculionidæ, and the beak is slender, and in some species extremely long, for the purpose of performing its function as an accessory organ of generation,* in the ♂ the mandibles assume a flat, curved, and pointed form, resembling those of ordinary Coleoptera. This sexual character is exhibited even in those genera in which the beak of the ♂ is nearly as slender, and the mouth as small as in the ♀.

The explanation of this difference in the mandibular structure is afforded by the interesting remarks of Mr. A. R. Wallace, concerning the wonderful pugnacity of the ♂ ♂ when in proximity to the ♀. An excellent account of the assistance given by the ♂ to the ♀ when she is occupied in boring the hole in which the egg is placed, is also given by C. V. Riley,† from observations made by his correspondent W. R. Howard, of Forsyth, Missouri.

These combats, however, result in no injury to either of the parties engaged; the dense chitinous covering affords a perfect protection; the weaker male, overcome by exhaustion, eventually flees, and leaves to his more vigorous victor the honorable task of guarding and assisting the fair object of strife in her efforts to preserve the species.

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* Harris, Ins. Inj. Veg. 3d ed. 68; Wallace, Malay Archipelago (ed. Harper), p. 482; Riley, Sixth Annual Report, Ins. of Missouri, p. 115. These authors mention that the ♀ makes with her beak deep perforations in the tree, and deposits an egg in each one of them; Lec., Amer. Journ. Sci. and Arts, 1867.

† Sixth Annual Report on the Noxious, etc., Insects of Missouri, 1874, p. 415.

The habits, therefore, of these insects, as well as their peculiarities of structure, deserve a closer attention than has yet been given to them.

The smooth eyes, the reticulations of which are seen only through the transparent integument, and the form of the front tibiæ, indicate a resemblance, though a remote one, to Rhyssodidæ, such as might perhaps exist among objects of quite different nature originating in the same period of time. The geographical distribution of the Brenthidæ is also favorable to the idea that they represent a tolerably ancient form of life.

The great extension of the longitudinal axis of the body exceeds in some members of this family any proportion that occurs in other Coleoptera; and it is singular to see that a character, which usually indicates feebleness of development, is here associated with densely chitinized integuments, and great complication of domestic life.

The family divides itself naturally into two sub-families, the characters of which have been sufficiently exposed above.

Antennæ 11-jointed, last joint oval, pointed, not larger.	BRENTHINÆ.
Antennæ 10-jointed, last joint very elongate.	CYLADINÆ.

Sub-Family I.—BRENTHINÆ.

Of this sub-family two genera belong in the faunal limits treated of in this work, though one of them (Brenthus), is in a political sense partly extra-limital, having occurred in Lower California.

These two genera represent in the arrangement of Lacordaire separate groups, but in the plan of subordination of characters herein adopted, they seem to indicate what we have called tribes, which may be distinguished by the sexual and other differences in the head, as well as by the form of the prothorax.

Beak very dissimilar in the two sexes; antennæ not very remote from the eyes, rather slender, not compressed, nor clavate; prothorax convex, not grooved.	ARRHENODINI.
Beak slender in both sexes; antennæ far distant from the eyes, somewhat thickened and stouter externally; prothorax deeply grooved towards the base.	BRENTHINI.

Tribe I.—**ARRHENODINI.**

The genus Eupsalis, represented in our fauna by a single species, differs from Arrhenodes by the brilliant lustre of the surface, and by the hind part of the head being less prominent; in view of the magnitude of the variations in the ♂ ♂, which we have mentioned below, we have great doubt of the generic value of these characters; nevertheless, our opinion can only be tested by a careful study of foreign species, which would interrupt the progress of the present memoir, and is, moreover, not essential for the elucidation of our own fauna.

The distribution of Eupsalis, even as thus limited, is remarkable; one species in Atlantic North America, one species in Guinea, and one in Madagascar, and perhaps one in Brazil. It is worthy of remark in this connection, that the genus Amorphocephalus, the only Brenthide found in Europe, is also represented in Australia.*

The development of the head of the male, and the size in both sexes (7.2–17 mm.), vary in an unusual degree in this insect.

Tribe II.—**BRENTHINI.**

Two species of Brenthus collected by Mr. Xántus, at Cape San Lucas, Lower California, which are closely allied to Mexican species, have been fully described by Dr. Horn;† one West Indian species, *B. anchorago*, is found in Southern Florida. We observe in the males also great variation in the form of the head in different individuals, although the beak, though shorter, is as slender in the ♂ as in the ♀, and the mandibles are equally small, but different in form; the distance from the eyes to the insertion of the antennæ is proportionally longer in the larger males.

The head is deeply excavated beneath, just in front of the neck, in *B. peninsularis*, while it is only slightly so in *B. lucanus*. In *B. mexicanus* there is a short but deep groove in the same position. The front femora alone are toothed in *B. mexicanus* and *lucanus*, while they are all toothed in *peninsularis*.

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* Lacordaire, Gen. Col., vii. 423.

† Trans. Amer. Ent. Soc., iv. 128.

Sub-Family II.—CYLADINÆ.

This sub-family represents the tribe Cylades, of Lacordaire, placed by him between Eurhynchus and Apion, and consists of but two genera, one of which, Cylas, occurs in Asia and Africa, while the other, Myrmacicelus, is found in Australia. The characters of this sub-family are sufficiently exposed in the description of the family, and the singular form of the antennæ, as well as the very peculiar appearance of the insect, will enable it to be easily recognized.

The relations of these insects with Brenthidæ were well recognized by Fabricius, Latreille, and Olivier, and we know not for what reason they have been lost sight of by more recent observers.

Cylas formicarius is injurious to the tuber of the sweet potato in Louisiana and Florida. It also occurs in the Antilles, Cochin China, India, and Madagascar. It has probably been introduced from Asia.

FAM. LXXXI.—CALANDRIDAE.

Mouth cavity variable according to sub-family, as follows:—

1. Gular peduncle very long, concealing the mentum and ligula, buccal fissures narrow and long; mandibles compressed, with three apical teeth in Calandrinæ (genuini).
2. Floor of the mouth so prolonged that all of the organs are concealed, except the mandibles, which are convex on the inner face, with three apical teeth, and usually diverge externally in Rhininæ.
3. Gular peduncle rather broad, mentum trapezoidal, transverse; maxillary palpi rather large; mandibles flattened, curved, with the apex acute, and one prominent tooth on the inner edge in Cossoninæ.

Antennæ geniculate, inserted near the base of the beak (Calandrinæ) or about the middle (Rhininæ and Cossoninæ); scape long, funicle varying from four to seven joints; club variable, with the basal part, and sometimes nearly the whole surface shining, not sensitive; oval and annulated as usual in most Cossoninæ.

Head porrected, beak at most capable of being deflexed vertically, never narrowed behind the eyes; beak sometimes long, sometimes short; eyes sometimes small, sometimes very large and transverse, contiguous beneath (Rhininæ); antennal grooves very short, and not receiving the scape in Calandrinæ, suddenly deflexed under the eyes, and receiving the scape in Cossoninæ.

Prothorax truncate in front, not emarginate beneath, prosternum long in front of the coxæ, which are usually separated; prosternal sutures effaced; the transverse suture between the coxæ is wanting in Calandrinæ and Cossoninæ, but distinct in Rhininæ.

Mesosternum triangular, truncate behind, side pieces varying according to genus and tribe; middle coxæ separated, cavities rounded.

Metasternum usually long, episterna varying in breadth, broader in front, epimera large in some Calandrinæ, small in other genera and sub-families; hind coxæ transverse, oval, not attaining the side of the abdomen.

Elytra without epipleuræ; exposing the pygidium in Calandrinæ, covering it more or less completely in the other sub-families; on the inner surface the elevated fold commences near the base, continues parallel and close to the margin as far as the posterior curvature, where it diverges and becomes obsolete. The space between the ridge and the margin has a pearly lustre, and may possibly serve as a stridulating organ; in the Cossoninæ this ridge diverges much less and becomes obsolete sooner.

Abdomen with five ventral segments, of which the first and second are longer, with the suture nearly obliterated at the middle in Calandrinæ, but deep and entire in Rhininæ; in Cossoninæ they are very long, and the suture is effaced at the middle; the third and fourth segments are short, and the sutures straight and deeply impressed; the fifth is about as long as the third and fourth united, and is rounded behind. The dorsal segments are membranous, except the last, or pygidium, which is large, nearly perpendicular in Calandrinæ, obliquely deflexed in the other sub-families; the anal segment of the ♂ is quadrate and retractile in Calandrinæ and Rhininæ, broader and less retractile in Cossoninæ, but not contiguous with the pygidium as in Curculionidæ and Brenthidæ; the lateral edge of the metathorax and of the ventral segments is sharp and fits into the lateral groove of the inner surface of the elytra; in the Cossoninæ this edge continues on and around the last ventral, thereby showing a tendency towards the modification finally perfected in the Scolytidæ, and of which we have already seen traces in the Brenthidæ.

Legs moderate, varying, though not greatly, according to genus; thighs usually stoutly clavate, not toothed; tibiæ rather short, strongly unguiculate at the outer angle. Tarsi frequently narrow and not brush-like beneath; third joint sometimes bilobed (Rhininæ), sometimes broad, patellate, and not emarginate (certain Sphenophori); claws divergent, simple.

There are embraced in this family several very distinct forms which agree with Curculionidæ in general characters, but differ in having the last dorsal segment of the ♂ not articulated directly at the end of the last dorsal, but either retractile or concealed under it. While the mouth organs of the Cossoninæ are similar to those of ordinary Curculionidæ, and submit to modifications similar to those of Hylobiini for instance, in the other sub-families there are specializations which do not otherwise occur among Rhynchophora.

With regard to the affinities of the members of this family, it may be said, in general terms, that the Calandrinæ show an alliance with the Barini; the Rhininæ continue the specialization still farther, and have not a direct resemblance to any other tribe. The Cossoninæ seem to be a connecting line from Hylobiini to Scolytidæ, to which they approach very closely in Rhyncolus.

Three sub-families occur in our fauna, the characters of which have been sufficiently indicated above: the following table will enable them to be readily distinguished:—

Buccal cavity elongate, peduncle of mentum elongate, narrow; pygidium exposed. CALANDRINÆ.
Buccal cavity entirely at the apex of the beak; pygidium covered. RHININÆ.
Buccal cavity normal, peduncle of mentum short, oral organs exposed; pygidium covered. COSSONINÆ.

Sub-Family I.—CALANDRINÆ.

Our genera indicate three tribes:—

Side pieces of metathorax very wide, epimera large. RHYNCHOPHORINI.
Side pieces of metathorax moderate or narrow;
    Mesothoracic epimera broadly truncate externally; club of antennæ wedge-shaped. SPHENOPHORINI.
    Mesothoracic epimera acute externally; club of antennæ oval. CALANDRINI.

Tribe I.—**RHYNCHOPHORINI.**

The species of this tribe are of large size, and with the exception of Rhynchophorus, have the mandibles turned outwards as in the Rhininæ; in the genus just mentioned, the mandibles are of the usual pincer-form with three small apical teeth. The funicle of the antennæ consists of six perfoliate joints, strongly constricted at the outer end; the club is transverse, trapezoidal, corneous, with the terminal face flat, spongy, and sensitive.

One species, *R. cruentatus*, represents this tribe in the Southern States. It is parasitic on *Chamærops palmetto.* In consequence of the extension of the mesothoracic epimera upwards, the humeral portion of the elytra is truncated, as in Barini. The third joint of the tarsi is but little wider than the second, not emarginate, fringed at the apical margin beneath. In the ♂ the tibiæ, and to a less extent the thighs are densely fringed with long yellow hair on the inner side: in the ♀ the hairs are much less dense. The genital segment is sometimes protruded; it is nearly smooth, and finely channelled above in both sexes, but is longer and narrower in the ♀, in which sex also the pygidium is more flattened, and more obliquely narrowed at the tip. Another species, *R. palmarum*, occurs in the southern part of California.

Tribe II.—**SPHENOPHORINI.**

The species of this tribe are rarely large, but never very small. The mandibles are always pincer-shaped, with three apical teeth. The mesothoracic epimera are large, and truncate at the outer side, so that the outline of the elytra near the base is straight, and not oblique as in the preceding tribe; the metathoracic episterna are rather narrow, and the epimera small, though quite obvious.

The following genera have been observed in our fauna:—

Spongy portion of antennal club flat. **Scyphophorus.**
Spongy portion of antennal club convex. 2.
2. Anterior coxæ widely distant. **Metamasius.**
Anterior coxæ narrowly separated. 3.
3. Third joint of tarsi patellate, spongy surface not divided. **Cactophagus.**
Third joint of tarsi patellate, spongy, narrowly divided. **Rhodobænus.**
Third joint of tarsi pilose at the sides or glabrous; 4.

4. Body beneath glabrous. . **Sphenophorus.**
Front and middle coxæ, 1st and 2d ventral segments hairy. **Trichischius.**

Scyphophorus, Metamasius, and Cactophagus occur in Arizona and California, Rhodobænus from Atlantic region to Arizona, Trichischius in Colorado, and Sphenophorus from the Atlantic to the Pacific.

Tribe III.—CALANDRINI.

This tribe consists of small species, in which the mandibles are pincer-shaped, and not everted; the club of the antennæ not compressed, and the mesothoracic epimera transverse, acute at the outer end, and intervening between the humeral part of the elytra and the base of the prothorax. The anterior part of the last dorsal segment of the abdomen is channelled for the reception of the sutural edge of the elytra, almost as in Anthribidæ. This is a very peculiar character, and no trace of it exists in the other genera in our fauna.

Three species of Calandra occur in our fauna; they have been distributed in the cereal grains upon which they depredate, so that their original habitat cannot be known with certainty. Dr. Horn mentions that from time to time other species have been introduced by ships from tropical ports, but fortunately they have not yet become naturalized.

Sub-Family II.—RHININÆ.

This sub-family corresponds nearly if not exactly with Lacordaire's tribe Sipalides, and the essential difference between it and the Calandrinæ is in the position of the buccal opening which is entirely at the end of the beak, not extending upon the under surface; the pygidium is not large and perpendicularly declivous as in the last sub-family, but covered by the elytra, which are conjointly rounded at tip; another character also separates it from Calandrinæ (though not from Lacordaire's tribes Stromboscerides and Oxyrhynchides, which are not represented in our fauna, and are unknown to us in nature); the eyes are strongly granulated, very large, and confluent on the under surface of the head.

In nearly all the genera mentioned by Lacordaire, the mandibles are convex on the inner face, and the apical teeth are everted, though this is probably a group or generic character as in certain tribes of Calandrinæ. The club of the antennæ varies in form according to genus, and is not annulated. The tarsi also vary, the third joint being narrow in some genera, wide and bilobed in others.

But one representative, *Yuccaborus frontalis*, occurs in California, which indicates a genus allied to Rhina and Harpacterus.

Sub-Family III.—COSSONINÆ.

The abnormal form of mouth seen in the two preceding subfamilies is here replaced by the ordinary buccal cavity and mouth organs seen in Curculionidæ. The gular peduncle is rather broad, not very long, the mentum and ligula with its palpi are distinct and moderately large, and the maxillæ and palpi are well developed. The beak varies greatly, being sometimes rather long, and moderately slender, sometimes so short and stout as to become indistinct. The antennæ are inserted at a variable distance, being sometimes basal, sometimes nearly apical; the scape generally extends beyond the eyes; the funicle has from four to seven joints; the club is small, oval, partly corneous in some genera, and but feebly annulated. The front coxæ are sometimes widely separated, sometimes almost contiguous. The thighs are unarmed, and the tibiæ are armed in our genera with a long curved spine at the inner apical angle; the tarsi are variable, the third joint is usually not broader; in one genus, Dryophthorus, by an exception otherwise unknown in the family, and repeated again only in Platypus and some other genera among the Scolytidæ, the tarsi are distinctly 5-jointed.

Neglecting the number of joints in the funicle of the antennæ as being rather of generic than tribal value, the few genera represented in our fauna may be divided as follows:—

Beak long, not dilated at tip; body uneven, covered with a crust. DRYOPHTHORINI.

Beak long or moderate, usually dilated at the end, with rapidly descending antennal grooves, front coxæ distant, body sometimes depressed. COSSONINI.

Beak usually short, always continuous with the front, and equally stout; front coxæ approximate; body cylindrical. RHYNCOLINI.

Tribe I.—DRYOPHTHORINI.

We have associated with Dryophthorus two other genera which have but little in common with it or with each other, except the following characters, by which they differ from other Cossoninæ, and approach other groups of Rhynchophora. The beak is longer than the head, not very stout, cylindrical, not dilated at tip, and the buccal cavity is smaller; the gular peduncle and mentum are smaller and narrower than in the other tribes. The tibiæ are slender, not at all dilated, and the terminal hook is long. The body is coarsely sculptured, and covered with a dirt-colored crust.

Two groups are indicated by the three genera before us:—

Metasternum long; funicle 4-jointed.	DRYOPHTHORI.
Metasternum long or short; funicle 5–7 jointed.	DRYOTRIBI.

Group I.—**Dryophthori.**

A single small species represents this group in our fauna. It resembles in form Calandra, rather than any genus of Cossoninæ known to us. The antennal club is rounded, oval, corneous, except the tip, which is spongy and not annulated; the joints of the funicle are only four, while those of the tarsi are distinctly five, though in the south European Chærorhinus, according to description, this anomaly disappears, and the tarsi are 4-jointed. The metasternum is long and the side pieces are narrow; the first, second, and fifth ventral segments are very large; third and fourth excessively short, shorter in fact than in any other genus we have examined. The antennæ are inserted very near the eyes, which are coarsely granulated and transverse.

Dryophthorus corticalis is found in the Atlantic district, generally under bark. Boheman mentions the occurrence in California of *D. bituberculatus*, which is widely distributed over the islands of the south Pacific, Sandwich Islands, and New Zealand. Its extension to California is doubtful.

Group II.—**Dryotribi.**

Two species of very remarkable genera are here represented; the first bears a somewhat resemblance to Dryophthorus, and in the arrangement of Wollaston* would be placed in the first group of his Pentarthrides. The second genus would probably go near Lymantes, which is thus far unknown to us, and may perhaps have some relation to the European Styphloderes.

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* Genera of the Cossonidæ, Trans. Ent. Soc. London, 1873, p. 434.

Besides the more slender beak and the crusty covering these insects differ from those of the following two tribes by the head being rather peculiarly constricted behind the eyes, which are small, rounded, and very coarsely granulated; the result of this form of head is that the eyes are situated on the beak instead of at the sides of the cranium proper. The scutellum is not visible in either of our genera, and we are inclined to believe that this will be found a character of the group, permitting the association of forms not widely separated.

Antennæ with 5-jointed funicle.	**Dryotribus.**
Antennæ with 7-jointed funicle.	**Gononotus.**

The two species, one of each genus, are found in Florida.

Tribe II.—COSSONINI.

We associate as a distinct tribe certain other genera, which have not the body covered with a crust, but shining and bare; some of the foreign genera are more or less setose, but ours are glabrous, with the exception of Himatium.

The beak is never very short, and is frequently dilated at tip; the antennæ are inserted near the tip or at the middle; the antennal grooves frequently descend rapidly on the sides of the beak, and sometimes are directed towards the eyes, but the antennæ are not received in repose in a deep transverse gular groove as in the next tribe. The club varies in form, and in our genera the funicle is 7-jointed; whether any of the genera of other countries, with less number of joints in the funicle, belong to the tribe as here constituted, must be determined by subsequent investigations.

The arrangement here proposed differs radically from that offered by Mr. Wollaston, and, if found in accordance with natural affinities, will result in a great reduction of the number of genera.

The genera we have recognized in our fauna are as follows:—

Body glabrous.	2.
Body pubescent.	**Himatium.**

2. Body not depressed, beak not dilated at tip. 3.
   Body depressed, beak dilated at tip; antennæ inserted near the tip, grooves descending rapidly. **Cossonus.**
3. Antennæ inserted near the middle of the beak. 4.
   Antennæ inserted near the tip of the beak; funicle stout, club moderately small. **Macrorhyncolus.**
   Antennæ inserted near the base of the beak; body very narrow. **Macrancylus.**
4. Antennal grooves descending obliquely. 5.
   Antennal grooves directed towards the eyes. **Allomimus.**
5. Body pale, very elongate; funicle slender, club large. **Stenomimus.**
   Body black, less elongate; funicle gradually stouter, club large. **Caulophilus.**
   Body black, less elongate; funicle very stout, club small. **Mesites.**

Macrorhyncholus is found in California; Cossonus extends across the continent; the other genera belong to the Atlantic region.

Tribe III.—**RHYNCOLINI.**

The genera of this tribe while differing from those of the Cossonini only by having the prosternum very narrow between the coxæ, and by having a deep transverse gular groove beneath in front of the eyes, exhibit other characters which show a strong approximation to the Scolytidæ; thus the number of joints in the funicle of the antennæ varies so as to be barely of generic value; the beak becomes very much shortened, and the head comparatively larger, as in Stenoscelis; the form of the club varies, becoming wedge-shaped, truncate, and spongy at tip in Wollastonia, thus recalling the form seen in Rhynchophorus, etc.; quite rounded or perhaps a little transverse in Stenoscelis. The form is also that of certain Scolytidæ. Rhyncolus resembles closely one section of Hylastes, while Stenoscelis has altogether the appearance of Hylurgops (*H. rugipennis*, etc.).

As in the Rhynchophora, from the nearly perfect representation of past and present forms, there are almost always intermediate genera to be found, so in the present tribe Phlœophagus seems to be one of such intermediates, and would be in place in the preceding tribe, did we not regard the approximate front coxæ as having greater systematic value than the longer beak and the weaker gular groove.

The antennal grooves always commence near the tip of the beak and descend obliquely below the eyes.

Our genera may be separated as follows:—

Beak thick, neither dilated at tip nor cylindrical, slightly narrowed from the base to the tip, convex. 2.
Beak very short, parallel on the sides. 4.
Beak longer, gula only feebly concave transversely. **Phlœophagus.**
2. Club rounded, pubescent, feebly annulated. 3.
Club corneous, truncate at tip, which is spongy; funicle 5-jointed. **Wollastonia.**
3. Funicle 5-jointed. **Amaurorhinus.**
Funicle 6-jointed. **Hexarthrum.**
Funicle 7-jointed. **Elassoptes.**
4. Tarsi dilated, antennal grooves long. **Rhyncolus.**
Tarsi narrow, antennal grooves very short. **Stenoscelis.**

Hexarthrum is found in houses in New York and in Washington, D. C., and is probably introduced. Elassoptes lives on the sea-shore of California; Rhyncolus extends across the continent; the other genera occur in the Atlantic region.

FAM. LXXXII.—SCOLYTIDAE.

Mentum moderate in size, varying in form in some genera according to sex; without gular peduncle (except in Hylastes, where it is very small); ligula and palpi small, the former sometimes retracted, sometimes prominent.

Maxillæ exposed, palpi stout and short.

Mandibles stout, curved, more or less toothed on the inner side.

Antennæ inserted on the sides of the head between the eyes and mandibles; composed mostly of scape and club, funicle usually very short, from 1- to 7-jointed; club large, solid, annulated, or rarely (Phlœotribus) lamellated; surface of the club more or less sensitive according to genus.

Head prominent in some tribes, deflexed and protected by the prothorax in others; eyes usually large and transverse; beak never long, frequently so short as to be not apparent. Labrum feebly developed, sometimes visible.

Prothorax truncate in front, exposing the head (Platypodinæ, Scolytini, and Hylurgini), or prominent, convex, and rounded (most Tomicini); lateral edge not distinct (except in Scolytus), and prosternal sutures obliterated; flanks excavated for the partial reception of the front legs in Platypodinæ; coxal cavities usually confluent; separated in a few genera.

Mesosternum triangular, pointed behind, or slightly truncate, episterna (Platypodinæ) excessively large, ascending between the base of the prothorax and elytra with the epimera small, posterior, and transverse, or with the suture very indistinct; coxæ rounded, not widely separated.

Metasternum long, sometimes (Platypodinæ) very long; side pieces parallel or nearly so, not dilated in front.

Legs moderate in length, rather stout, front coxæ almost always contiguous; middle and hind coxæ more or less separated; tibiæ compressed, toothed, or with transverse ridges on the outer side rarely simple (Micraces); armed with a terminal hook at the inner apical angle. Tarsi in some genera filiform and 5-jointed; in others 4-jointed, with the third joint either narrow or dilated and bilobed; last joint long, with large, simple, divergent claws.

The insects of this family are mostly of cylindrical form and small size. They are the most formidable enemies of trees, sometimes devastating the forests, especially of conifers, by appearing in incredible numbers: the burrows are chiefly between the wood and the bark, though some genera penetrate more deeply (Xyloterus, etc.). The patterns made by them are complex and vary according to genus and species; those of several European species are figured in the excellent work of Ratzeburg,* and since descriptions of our species are now accessible, so that their identification is easy, we trust that those interested in the preservation of our forest trees may direct their attention to this important subject. Specimens of the ravages of these insects should be carefully collected, with individuals taken from the burrows, and these should be deposited in some museum where they will be carefully preserved for future study.

The great differences exhibited by Platypus and its allies, indicate the propriety of separating them as a distinct sub-family, a course already adopted by Lacordaire.

First joint of tarsi as long as the others united.	PLATYPODINÆ.
First joint of tarsi much shorter than the others united.	SCOLYTINÆ.

Sub-Family I.—PLATYPODINÆ.

Head large, not covered by the prothorax, front wide, oblique, or vertical; labrum small, but distinct. Beak wanting; eyes

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* Die Forst-Insecten, vol. i.

rounded, not convex, finely granulated in our species. Antennæ with large scape (elongated and curved in some foreign genera), and large compressed solid club, which is pubescent except for a small space at the base; funicle composed of four small joints. Prothorax elongate, truncate before and bisinuate behind; subsinuate on the sides; flanks broadly excavated for reception of front legs. Prosternum moderately long in front in the coxæ, which are very large, conical, exserted, and contiguous in our species; space behind the coxæ very short. Pronotum considerably longer than the under surface; middle of base notched for reception of the carina of the mesonotum. Mesosternum triangular, middle coxæ narrowly separated; episterna very large, quadrate, occupying the space formed by the prolongation of the pronotum; epimera small, transverse, posterior, and indistinct. Metasternum very long, episterna parallel, rather wide; hind coxæ slightly separated. Ventral segments five; first and second very short, together scarcely equal to the third, which is equal to the fourth; fifth a little longer, rounded behind; last dorsal segment horizontal, partially or completely covered by the elytra, according as the segments are deflexed or retracted.

Elytra margined and perpendicularly declivous at base, striate, variously prolonged into processes at tip, according to species and sex. Mesonotum strongly carinate.

Legs short, thighs stout, compressed; tibiæ shorter than the thighs, stout, unguiculate, marked on the outer side with transverse ridges. Tarsi long, slender, first joint as long or longer than the three following united; fourth joint one-half as long as the third; fifth as long as the joints 2–4 united; claws long, simple, divergent.

This sub-family is represented in our fauna by a few species of Platypus found chiefly in the Southern States. The species are cylindrical, and suggest a resemblance to certain Colydiidæ, from which, however, they widely depart in structural characters.

Platypus is represented by a few species on each side of the continent.

Sub-Family II.—SCOLYTINÆ.

The characters by which this sub-family differs from the Platypodinæ have been already sufficiently pointed out; in other respects the species differ greatly according to genus and tribe, and the chief peculiarities will be pointed out under the appropriate heads.

The genera which occur in our fauna indicate the following tribes:—

1. Prothorax not prolonged over the head, which is oblong and prominent; tarsi with fourth joint smaller or indistinct; third joint usually bilobed. 2.
   Prothorax prolonged over the head, which is deeply immersed and globose; tarsi filiform, 5-jointed. TOMICINI.
2. Ventral surface ascending obliquely. SCOLYTINI.
   Ventral surface regularly cylindrical. HYLURGINI.

Tribe I.—TOMICINI.

Although the genera of this tribe are the farthest removed from Cossoninæ by their characters; they are in some respects the most nearly allied to Platypus, with which the family must naturally commence, on account of the relations between the latter and Brenthidæ.

The head is globose, or nearly so, and deeply immersed in the prothorax; the eyes are transverse, sometimes divided (Xyloterus); the front is not prolonged into a beak; the antennæ are inserted near the base of the mandibles; the scape is long and stout, the funicle short, composed of from one to five joints, the mass large, compressed, varying in form and structure according to genus. Prothorax more or less cylindrical behind, prolonged in front over the head and much rounded, so that the anterior opening becomes very oblique, or even sometimes almost horizontal; the sculpture is peculiar, and consists for a greater or less distance from the apex of sharp granules or little spines; behind the surface is smooth or punctured; the side margin is not distinct. The mesonotum is never carinate as in Platypus. Elytra suddenly declivous in front, so that the edge fits against the base of the pronotum; usually obliquely excavated and toothed on the posterior declivity; ridge on inner surface near the outer margin, effaced near the tip; groove very deep and narrow. Pygidium entirely covered. Mesosternum acute behind, side pieces obliquely divided, epimera small, not attaining the coxæ. Metasternum rather long, side pieces narrow. Ventral segments five; first and second longer, closely united; fifth longer than the fourth, rounded behind, edge acute, fitting under the elytral edge. Front coxæ large, globose, prominent, and contiguous; middle coxæ nearly contiguous; hind coxæ also.

Legs stout, thighs thick, not toothed; tibiæ compressed, armed with a large hook at the inner angle of the apex; outer edge serrate and acute except in Micracides; rarely flattened, with two edges, between which are transverse ridges, somewhat as in Platypus. Tarsi slender; fourth joint very small, but distinct; fifth joint long, with large, divergent simple claws.

Crypturgus and Dolurgus seem to us more properly placed in the tribe Hylurgini. The other genera represented in our fauna arrange themselves naturally into groups, according to the structure of the club of the antennæ.

Club large, oval, compressed, pubescent, and transversely annulated on both sides, sutures straight or slightly curved; inner face usually broadly concave; tibiæ serrate. CORTHYLI.

Club large, oval, solid, pubescent on both sides; eyes completely divided; tibiæ serrate. XYLOTERI.

Club small, entirely corneous on the inner face, obliquely truncate on the outer face; truncature spongy and sensitive, marked with two concentric lines, or transverse sutures, or entirely terminal and narrow; tibiæ serrate. XYLEBORI.

Club large, oval or rounded, compressed, entirely corneous on the inner face, more or less pubescent on the outer face, and divided by two or three sutures, which are usually sinuated or angulated; declivity of elytra deeply concave with acute margin, usually strongly toothed; funicle of antennæ with five distinct joints; tibiæ coarsely serrate. TOMICI.

Club elongate-oval, marked on each side by sutures which are sometimes long and curved, but sometimes nearly straïght; the basal joint corneous, others pubescent; funicle 5-jointed; elytra convex behind, with the suture slightly prolonged; tibiæ fringed with hair, but not serrate; tarsi usually with joints 1–3 rather stout, fourth very small, fifth long and slender. MICRACIDES.

Since the publication of the Rhynchophora of North America, in which the arrangement adopted in the present work is first set forth, the monograph of Tomicidæ, corresponding with our Tomicini has been issued by Eichhoff in the Acad. Roy. Sciences Liége, mém. vol. viii., 1878. The genera are divided by Eichhoff in two sets as follows:—

1. Maxillary lobe pilose, more densely at tip; last joint of palpi extremely finely striate; genera, Trypodendron (Xyloterus), Corthylus, Gnathotrichus, Coccotrypes, Xyleborus, Pterocyclon, 1868 (Monarthrum, 1866).

2. **Maxillary lobe with radiating spines on outer edge; last joint of palpi not striate; genera, Crypturgus, Dolurgus, Stephanoderes (Hypothenemus), Cryphalus, Micracis, Pityophthorus, Dryocœtes, Tomicus, Xylocleptes.**

These characters are very difficult to observe and verify, and after careful trial we have concluded to adhere for the illustration of our fauna to the scheme proposed by Dr. Le Conte.

Those, however, who prefer the Eichhoffian system can make the necessary changes by detaching Pityophthorus proper from Gnathotrichus, and transferring it to the Tomici; by dividing the group Xylebori between Corthyli and Tomici; and by removing the group Crypturgi from Hylurgini to the present tribe.

Group I.—**Corthyli.**

In this group the species are mostly of very small size, and are easily recognized by the club of the antennæ, which is pubescent and annulated with nearly straight sutures on both side. One species of Micracis (*hirtellus*) has a nearly similar club, and shows thereby a resemblance to the present group, but it is otherwise so closely allied to the other Micraces that it seems unnecessary to separate it from them. The funicle varies from one to five joints; the tibiæ are serrate or ridged transversely on the outer side; the tarsi are slender, the fourth joint distinct; fifth long, with simple, divergent claws. The anal segment of the ♂ is occasionally visible from beneath.

The genera may be thus separated:—

1.	Funicle 1-jointed.	2.
	Funicle 2–5 jointed.	3.
2.	Body robust.	**Corthylus.**
	Body slender.	**Monarthrum.**
3.	Outer part of funicle rather slender;	
	Club of antennæ fringed with long hairs.	**Gnathotrichus.**
	Club of antennæ not fringed.	**Pityophthorus.**
	Outer part of funicle very short.	**Hypothenemus.**

Corthylus punctatissimus depredates on maple trees in the Atlantic States; the other genera extend across the continent. Hypothenemus, as understood by us, includes *Stephanoderes* Eichhoff.

Group II.—**Xyloteri.**

The insects of this group are rather robust and cylindrical; the declivity of the elytra is oblique, not excavated and not toothed. The eyes are completely divided, and the club of the antennæ is oval, solid, pubescent on both sides, and not annulated. The tibiæ are broad, rounded at tip, and serrate on the outer and terminal edge. The tarsi are slender, the fourth joint small, as usual, and the fifth long, with simple divergent claws. The species bore deeply into the wood of the trees they attack, thus injuring the timber much more than the subcortical Tomici.

Four species of Xyloterus occur in the Atlantic region, one of which extends to Alaska and Vancouver Island.

Group III.—**Xylebori.**

The essential character of this group is that the club of the antennæ is entirely corneous, and not articulated on the inner surface; on the outer surface it is also corneous, except towards the distal end, where it is obliquely truncate; the truncate surface is pubescent and sensitive, and has three concentric or transverse sutures, which indicate the other joints of the club. The scape of the antennæ is elongate, and the funicle usually distinctly 5-jointed, though in some species there appear to be but four joints. The tibiæ are dilated, more or less serrate, and spinose on the outer margin, with the apex obtusely rounded, and the inner angle not very strongly unguiculate. The tarsi are slender; fourth joint small, fifth nearly as long as the others united; claws strong, divergent, simple.

Funicle 5-jointed; antennal club with sensitive surface oblique, marked with annulated curved sutures. 2.
Funicle 5-jointed; sutures of club not concentric. . 3.
Funicle 4-jointed. **Cryphalus.**
2. Tibiæ straight, outer edge spinose. **Coccotrypes.**
Tibiæ with outer edge curved, finely serrate. **Xyleborus.**
3. Tibiæ and antennæ as in Xyleborus; antennal club obliquely truncate, with straight sutures. **Dryocœtes.**
Tibiæ slender, outer edge spinulose; antennal club not truncate, with sutures curved backwards forming loops, almost as in Micracis. **Xylocleptes.**

Coccotrypes has been introduced in date seeds. The other genera extend across the northern part of the continent.

Group IV.—**Tomici.**

The species of this group are of cylindrical, but not very slender form, and are easily recognized by the deeply excavated elytral declivity, which is sharply margined and acutely toothed. The club of the antennæ, as in the group Xylebori, is entirely corneous on the inner face, but is not obliquely truncate on the outer face. The sensitive surface is more or less distinctly defined, and is divided by two sutures which are more or less curved or angulated in our species, but are described in some European species as straight, thus showing an affiliation with Dryocœtes of the preceding group. The tibiæ are coarsely serrate, and the tarsal joints 1–3 are rather stouter than in the preceding groups.

Our species represent but one genus, Tomicus, which may be divided conveniently according to the form of the sutures of the antennal club. Species occur in all parts of our country under the bark of coniferous trees.

Group V.—**Micraces.**

The funicle of the antennæ is 6-jointed, the outer joints broader; the club is pubescent and usually marked with sutures on both sides, as in the group Corthyli, but these sutures are usually very much curved, though sometimes nearly straight; the basal joint is long, and in one sex is fringed on the front margin with very long hairs; the eyes are transverse, coarsely granulated, either distant or contiguous beneath. The prothorax is produced over the head, rounded and asperate in front, and its anterior opening is very oblique as in most Pityophthori. The elytra are usually punctured in rows, convexly declivous behind, then concave near the tip, and sometimes asperate with small granules; the suture is produced into a sharp point, except in *T. fimbricornis*. The tibiæ are compressed, armed with a terminal hook, outer edge acute, not at all toothed (or but slightly so in *M. rudis*), and fringed with long hair; the front pair are as broad at base as at tip; the joints of the tarsi 1–3 are rather stout in all the species except *M. hirtella*, where they are longer and more slender; the fourth joint is small, and the fifth long, slender, with divergent simple claws. Although important structural differences are seen in the species, we regard them as constituting but two genera. This group is excellently defined by the 6-jointed funicle, and the broad parallel front tibiæ.

Club pubescent and annulated on both sides, outer joints of funicle slightly broader, not fringed; elytra aculeate at tip. **Micracis.**

Club sparsely hairy, corneous, without sutures on upper surface; with two indistinct sutures on the lower surface; outer joints of funicle transversely produced, fringed with long hairs; elytra not aculeate. **Thysanoes.**

Micracis occurs on both sides of the continent; Thysanoes in the Atlantic States only. None live on conifers.

Tribe II.—SCOLYTINI.

The species of this tribe are easily known by the peculiar conformation of the ventral surface, which is, namely, flattened or concave, and obliquely ascending from the posterior end of the first segment to the fifth; the first and second segments are closely connate, and the other three are separated by straight sutures, about equal in length, and united are hardly longer than the oblique part of the second segment. The antennal club is pubescent on both sides, nearly solid, and marked with indistinct but strongly curved, or rather angulated, sutures; the scape is short, the first joint of the funicle rounded, the remaining joints (five in number) closely united forming a pedicel to the club. The thighs are stout, the tibiæ rather broad and compressed; the front pair are not serrate on the outer edge, which is quite sharp; the outer apical angle is armed with a long curved hook, and the inner angle is nearly rectangular but not armed with a spine; the outer margins of the middle and hind tibiæ are feebly serrate, they are truncate at tip, and armed with two spines or spurs at the *outer* angle, and a much smaller spine at the inner angle; the tarsi are slender, as long as the tibiæ; the third joint is deeply bilobed, the fourth small, the fifth long, with simple divergent claws.

The side margin of the prothorax is distinctly defined, a very rare character in Rhynchophora, and the front coxæ are separated by the prosternum, which is very short in front of the coxæ. In some of the species the ventral segments of the ♂ are ornamented with spines, or acute tubercles such as have been observed in Proctorus and certain species of Platypus.

But one genus, Scolytus, represents this tribe; species are found in both the Atlantic and Pacific regions.

Tribe III.—**HYLURGINI.**

In this tribe the head is exposed, not covered by a prolongation of the prothorax; the latter is truncate in front or but slightly rounded, and not differently sculptured; beak short and stout. The antennæ vary in form according to the group, and in Hylastes assume very much the same form as in Cossonidæ, to which some of these insects bear a strong resemblance. They may be distinguished, however, by the compressed and serrate or spinulose tibiæ.

The third joint of the tarsi is frequently dilated and bilobed, and the fourth joint, less conspicuous than in the preceding tribes, is sometimes quite indistinct. The first and second ventral segments are always separated by a well-defined straight suture, more deeply impressed than in Tomicini.

The prothorax is bisinuate behind, with a well-defined antescutellar angle in some of the species of all the groups except Hylastes. They thus manifest a tendency to the Anthribidæ (Choragus, etc.), as Hylastes does towards the Cossonidæ.

In several genera the front coxæ are separated by the prosternum, and in Dendroctonus and the allied European genera Hylurgus and Blastophagus the second and third ventral sutures are curved backwards at the sides. In Hylastes the prosternum is deeply excavated for the reception of the short beak. In all these characters resemblances are seen to different tribes of Curculionidæ.

Our genera indicate the following groups:—

Club oval, annulated, scarcely compressed. 2.
Club strongly compressed, not annulated, pubescent on both sides. POLYGRAPHI.
2. Joints of club separated. PHLŒOTRIBI.
Joints of club closely connate as usual. 3.
3. First and fifth ventral segments elongated, scutellum not depressed. 4.
Ventral segments nearly equal and scutellum depressed. HYLURGI.
4. Prosternum very short, funicle with few joints. CRYPTURGI.
Prosternum excavated; funicle 7-jointed. HYLASTES.

Group I.—**Polygraphi.**

This group is sufficiently defined by the club of the antennæ being large, strongly compressed, pubescent and sensitive, and without sutures on both sides, and by the antennæ being inserted as usual at the sides of the front. The tibiæ are broadly dilated, obliquely rounded at the apex, and finely serrate; the third joint of the tarsi is not bilobed, and the fourth, though small, is distinct. The basal margin of the elytra is acute and serrate.

Two genera occur in our fauna :—

Eyes slightly emarginate, funicle attached at the side of the club, outer joints slender. **Chramesus.**
Eyes completely divided, funicle attached at the end of the club, outer joints gradually stouter. **Polygraphus.**

Chramesus has priority over *Rhopalopleurus* Chapuis; two species occur in Carya in the Atlantic States. *Polygraphus rufipennis* extends from Georgia and Canada to Alaska.

Group II.—**Phlœotribi.**

This group is intermediate between the preceding and the following, and differs from both by the antennal club being composed of three separate joints, which in Phlœotribus form a lamellate mass, and in the European genus Phlœophthorus a loosely articulate club as in many Clavicornia. Dr. Chapuis describes the antennæ as frontal; but we see no special difference in their position from that observed in the preceding and following groups. The head is but very little prolonged in front of the eyes, and there is no preocular groove for the reception of the scape of the antennæ such as is observed in the two following groups. The tibiæ are dilated, compressed, obliquely rounded and serrate at tip, with the inner angle slightly mucronate; the tarsi have the joints 1–3 short, gradually a little wider; third not emarginate; fourth very small; fifth as long as the others united, with divergent simple claws. The basal margin of the elytra is acute and serrate.

But one genus, Phlœotribus, is represented in our fauna, in the Atlantic region.

Group III.—**Hylurgi.**

In this group the form varies from oval to cylindrical; the antennæ are inserted at the sides of the front, immediately before the eyes, which are large, transverse, slightly or not at all emarginate, and finely granulated. The scape of the antennæ is long, and is received in a narrow, transverse groove in front of the eyes; this groove becomes more developed in the next group, but is not apparent in the preceding groups or tribes; the mandibles are stronger, nearly flat above, and the labrum is obsolete; these characters indicate a recurrence towards the normal Rhynchophora. The funicle of the antennæ is 5–7 jointed; the first joint stout, the others slender, closely united; the club is very slightly compressed, annulated, and pubescent, oval-pointed in Hylesinus, circular, compressed, nearly glabrous, with transverse sutures in Dendroctonus. The ventral segments are convex, nearly equal; the first and fifth somewhat longer, the sutures deep and straight. The tibiæ are dilated, and strongly toothed except in Cnesinus and Bothrosternus, where they are not serrate; the third joint of the tarsi is usually bilobed, and the fourth very small; the fifth long with divergent simple claws.

The basal margin of the elytra is elevated and acute as in the two preceding groups, and the prothorax is narrowed from the base forwards.

	Funicle 7-jointed.	2.
	Funicle 5-jointed.	4.
	Prosternum narrow, tibiæ serrate.	**Hylesinus.**
2.	Prosternum wide between the coxæ.	3.
3.	Front tibiæ with three small teeth; prothorax strigose.	**Cnesinus.**
	Tibiæ bidentate, front ones with a large apical bifid spine; prothorax densely punctured.	**Bothrosternus.**
4.	Club oval, obtusely pointed; first joint of tarsi not shorter; outer joints of funicle much broader.	**Phlœosinus.**
	Outer joints of funicle scarcely broader.	**Chætophlœus.**
	Club oval-elongate; first joint of tarsi short.	**Carphoborus.**
	Club circular, compressed; first joint of tarsi not shorter.	**Dendroctonus.**

Cnesinus has priority over *Nemophilus* Chapuis. Hylesinus, Phlœosinus, and Dendroctonus extend across the continent; Chætophlœus is represented by one Californian species; the others all belong to the Atlantic region.

Group IV.—**Crypturgi.**

This group consists of two genera, represented by very small species of elongate form, which agree with Hylastes in general appearance and sculpture, but differ by the beak being much shorter, and the prosternum very short and not excavated. The genus Crypturgus has been usually associated with the Tomicini, on account of the slender tarsi, but it makes a notable exception to the other members of that tribe by the large exserted head, and the absence of the hood-like prolongation of the prothorax. We have, therefore, thought it best to remove it from that position, and place it with Dolurgus, as a separate group. Though differing in the antennal club, which is solid in Crypturgus, and annulated transversely with the first joint corneous in Dolurgus, these two genera are otherwise closely related, and differ remarkably from neighboring forms by the small number of joints in the funicle. The prothorax is elongate-oval, rounded in front, nearly truncate at base; the scutellum is very small, not depressed, and the basal edge of the elytra is not elevated. The elytra are elongate-cylindrical, with the posterior declivity convex; the striæ are well marked, and strongly punctured; the interspaces narrow, finely punctulate and slightly pubescent. The ventral sutures are straight and deep; the first and fifth segments are longer than the others. The prosternum is very short, not excavated; the front coxæ are contiguous; the tibiæ are dilated and finely serrate; the terminal spur is very small; the tarsi are slender, with the third joint not dilated.

Antennal club solid; funicle 2-jointed.	**Crypturgus.**
Antennal club annulated; funicle 3-jointed.	**Dolurgus.**

One species of Crypturgus in the Atlantic region, and one of Dolurgus in Alaska are our only representatives of this group.

Group V.—**Hylastes.**

In this group a reversion is made towards Cossonidæ, and some tribes of Curculionidæ, in the antennal funicle and club, the excavated prosternum, and the antennal grooves of the beak, which, though short and stout, is more developed than in any other Scolytidæ. The tibiæ are, however, more strongly serrate, and are armed with a strong apical spur; the tarsi are rather short, and the third joint is more or less dilated, bilobed, or emarginate. The ventral sutures are straight and deep; first and fifth segments longer than the others. The head is exserted and prominent, the beak short and stout, with oblique deep grooves, which unite in the gular space, forming a transverse impression; the eyes are transverse, not very finely granulated. Antennæ with 7-jointed funicle and oval annulated club, which is not compressed, and has the basal joint large, corneous, and shining, very much as in Baris. The scutellum is small, not depressed, and the basal

margin of the elytra is not acutely elevated, though quite distinct in *H. granulatus* and *pinifex*.

Three genera, which extend across the northern part of the continent, are indicated by our species:—

Front coxæ contiguous or nearly so.	2.
Front coxæ widely separated.	**Scierus.**
Third joint of tarsi emarginate.	**Hylastes.**
Third joint of tarsi bilobed.	**Hylurgops.**

FAM. LXXXIII.—ANTHRIBIDAE.

Mentum large, deeply emarginate in front, closely connate (except in the group Hormisci) with the gular peduncle, which is broad and short; buccal fissures consequently narrow, only partially exposing the base of the maxillæ; ligula large, corneous, narrowly emarginate at tip; palpi 3-jointed, inserted at the sides of the lower face of the ligula, distant, slender, cylindrical, longer than in other Rhynchophora and flexible, as in normal Coleoptera and in Rhinomaceridæ; last joint elongated, narrower at the tip.

Maxillæ visible in the narrow buccal fissures, with two narrow lobes, usually rounded and ciliate at tip; palpi slender, 4-jointed, with the last joint longer and narrower at the tip.

Mandibles flattened on the upper surface, curved, pointed, or emarginate at tip.

Antennæ inserted usually under the sides of the front, rarely upon the front. They are 11-jointed, slender, and not geniculate; the first joint is stouter, but scarcely longer than the second; joints 3–8 slender, pubescent; 9–11 broader, more or less compressed, finely pubescent and sensitive. The antennæ of the ♂ are sometimes much longer than the body. The outer joints form a compact oval club in Hormiscus.

Head prominent, not deflexed; beak broad, flat, sometimes so short as to be indistinct; never cylindrical or slender, and never separated from the front by a transverse impression. Eyes moderate in size, not very finely granulated, rounded, sometimes slightly emarginate in front. Labrum distinct, quadrate, fringed with hairs. Gular suture completely obliterated.

Prothorax of varied form, usually trapezoidal and truncate in front; rarely somewhat rounded over the head (Choragus);

base truncate, with a transverse elevated line, which is either antebasal (Tropiderini) or entirely basal; this line is abruptly bent forwards at the sides, and forms a more or less abbreviated side margin.

The prosternal sutures are entirely obliterated, as is also the short suture behind the posterior point of the prosternum, so that the under surface consists of but one piece. The coxal cavities are rounded and narrowly separated.

Mesosternum flat, triangular behind, with the point rounded, and separating the middle coxæ; cavities rounded, epimera transverse, oblique, not attaining the coxæ.

Metasternum long, side pieces narrow, or moderate in width, wider in front, with the outer angle prolonged forwards; in many genera there is a transverse impression in front, simulating a suture.

Elytra conjointly rounded behind, and forming a small sutural fold, which fits into a deep emargination of the pygidium; fold of the inner surface acute, not prolonged much behind the middle. Epipleuræ distinct. The striæ are ten in number, with a short scutellar one as in Carabidæ; this scutellar stria is usually about one-fourth the length of the elytra, and does not connect itself with the sutural stria.

Abdomen with five free, and sometimes nearly equal ventral segments; sutures straight; intercoxal process triangular, acute, or rounded in front; dorsal segment membranous, except the pygidium, which is corneous, declivous, and exposed; no anal segment in the ♂.

Anterior coxæ narrowly separated, globose; middle coxæ moderately separated, rounded; hind coxæ transverse, not prominent, never very widely separated.

Legs slender, front pair sometimes elongated in ♂; tibiæ truncate at tip, without spurs or hooks.

Tarsi brush-like beneath, 4-jointed; second joint triangular, emarginate; third joint bilobed, sometimes large, sometimes small; fourth joint slender with divergent claws, which are either simple or toothed.

Our genera represent four tribes:—

Antennæ inserted at the sides of the beak;	
Prothoracic ridge not basal.	TROPIDERINI.
Prothoracic ridge basal.	BASITROPINI.
Antennæ inserted on the front; prothoracic ridge basal;	
Elytra striate as usual.	ARÆOCERINI.
Elytra not striate.	XENORCHESTINI.

Tribe I.—**TROPIDERINI.**

The genera of this tribe are sufficiently distinguished by the position and form of the prothoracic ridge, which is remote from the base, more or less sinuous, and flexed obliquely at the sides. The antennæ are situated under the lateral edge of the beak, which is sometimes flattened and expanded so that the antennal cavities are partially covered.

Three groups occur in our fauna :—

Eyes entire, suture of mentum obliterated.	2.
Eyes emarginate ; suture of mentum distinct.	HORMISCI.
2. Sides of beak not dilated ; antennæ very long.	ISCHNOCERI.
Sides of beak dilated over the antennal cavities.	TROPIDERES.

Group I.—**Ischnoceri.**

Beak longer than the head, dilated at tip; antennal cavities large, lateral, limited above by a small, elevated line, which descends to the inferior margin of the eyes. Eyes longitudinal, elliptical, rather coarsely granulated. Antennæ very slender, longer than the body in ♂; two-thirds as long in ♀; first joint very short; second twice as long as first, and more than one-half as long as third; 9–11 broader, forming a compressed, loose, oval club. Tarsi with the first joint long; second triangular, emarginate, with prolonged angles; third as wide as the second, bilobed; claws armed with a long, acute tooth at the middle.

One species of Ischnocerus extends from Mexico into the Southern States.

Group II.—**Tropideres.**

The sides of the beak in the insects of this group are dilated over the antennal cavities, which are therefore not visible from above. The form of the antebasal ridge differs in each genus, and in conjunction with the antennal club and tarsal claws affords easy characters for distinguishing the genera. The eyes are entire, either rounded or oblique.

Antennal club narrow, not compressed.	2.
Antennal club oval, compressed.	3.
2. Prothoracic ridge strongly angulated and touching the base at the middle ; claws simple.	**Gonotropis.**
Prothoracic ridge straight at the middle, base deeply biemarginate ; claws acutely toothed.	**Eurymycter.**
3. Eyes oblique, slightly oval, beak short.	**Tropideres.**
Eyes rounded, beak longer, antennæ ♂ very long.	**Allandrus.**

Eurymycter fasciatus extends from New York to Vancouver Island: the other species are found in the Atlantic region.

Group III.—**Hormisci.**

The genera upon which this group is founded seem sufficiently distinct from the other Corrhecerides of Lacordaire to be separated from them. It has the following characters:—

Beak not dilated at the sides over the antennal cavities. Eyes emarginate, not finely granulated. Prothoracic ridge antebasal, curved, or obtusely angulate backwards at the middle, flexed obliquely forward at the sides. Tarsi with the first joint long; second triangular, scarcely emarginate; third bilobed, not narrower, but shorter than the second; claws acutely toothed at the middle. Mentum transverse, less deeply emarginate than usual, with the emargination nearly filled by the broad basal piece of the ligula; transverse suture between the gula and mentum distinct.

Antennal club 3-jointed. 2.
Antennal club solid, sensitive only at tip. **Hormiscus.**
2. Eyes feebly emarginate: claws indistinctly toothed. **Toxotropis.**
Eyes strongly emarginate; claws cleft almost to the base. **Gonops.**

Gonops is Californian, the other two genera are found in the Atlantic region.

Tribe II.—**BASITROPINI.**

The only characters of a general kind which can be given to distinguish this from the other tribes are that the antennæ are inserted under the sides of the beak, and that the prothoracic ridge is quite basal, causing the surface behind it to become perpendicular; it consequently attains the hind angles, and is there flexed forwards, not obliquely and at an obtuse angle, but rectangularly. As a farther consequence of this arrangement the basal margin of the elytra is acute.

Our species represent but three groups:—

Beak with parallel or nearly parallel sides. 2.
Beak narrow in front, trapezoidal. BRACHYTARSI.
2. Tarsi with third joint wider, deeply bilobed, visible from above. ANTHRIBI.
Tarsi with the third joint bilobed, not visible from above. CRATOPARES.

Group I.—**Anthribi.**

These species are sufficiently distinguished from Cratopares by the third joint of the tarsi being not narrower than the second, and quite visible from above; the second joint is broad, triangular, and rather flat, emarginate at tip. The sides of the beak partly cover the antennal cavities, which are large and deep, and but slightly visible from above. The antennæ are sometimes very long in the ♂, and the first joint is stouter and shorter than usual. The tarsal claws vary according to genus. Except in Anthribus the antennal cavities are somewhat distant from the eyes.

Hind angles of the prothorax not directed outwards. 2.
Eyes emarginate, hind angles of prothorax directed outward; front coxæ contiguous. **Eusphyrus.**
2. Front coxæ contiguous or nearly so. 3.
Front coxæ well separated by the prosternum. 4.
3. Claws almost cleft, body elongate-cylindrical, eyes emarginate. **Phœnicobius.**
Claws feebly appendiculate, body stout, subcylindrical, eyes oval. **Piezocorynus.**
4. Eyes rounded. **Anthribus.**
Eyes broadly emarginate. **Toxonotus.**

No species has yet been found in the Pacific region.

Group II.—**Cratopares.**

The insects of this group, represented by only two species in the Atlantic region, differ from the Anthribi, chiefly by the second joint of the tarsi less dilated, longer, and though deeply emarginate at tip, concealing the third joint so that the articulation is not visible from above; but merely the lobes, which do not extend beyond the prolonged angles of the second joint. The beak is flat and parallel on the sides; the antennal cavities extend to the eyes, which are oval and coarsely granulated, somewhat truncate in front. The side margin of the prothorax extends to about the middle; the base is slightly bisinuate, and the lower basal margin is very well defined, so that when the prothorax is deflexed, it might be supposed that the transverse ridge was not absolutely basal. The same is the case, though to a less extent, in the genera of the preceding group. The front coxæ are contiguous, and the mentum is but feebly emarginate in our species; the buccal fissures are rather wide.

Group III.—**Brachytarsi.**

In this group the beak is gradually narrowed from the eyes forwards, so as to become trapezoidal in form; the antennal cavities extend to the eyes, which are coarsely granulated and emarginate in front. The first and second joints of the antennæ are stout, the second a little longer, 3–8 shorter, gradually a little wider; 9–11 much wider, forming an oval compressed sensitive club. Prothorax rounded in front, overhanging the head, basal ridges flexed rectangularly at the angles, but extending only a very short distance along the sides; inferior basal margin acute. Elytra with even and equal interspaces. Tarsi with the first joint scarcely longer than the second, which is triangular and emarginate; third deeply bilobed, not narrower than the second, claws toothed near the tip, so as to appear cleft. Mentum deeply emarginate with lobes, rounded at tip; gula transversely impressed.

Our species, which occur in the Atlantic region, represent two genera.

Basal ridge flexed abruptly forwards at the hind angles, and continued along the sides of the prothorax for a short distance. **Brachytarsus.**
Basal ridge gently rounded and becoming obsolete at the hind angles. **Anthribulus.**

Tribe III.—ARÆOCERINI.

But two genera of this tribe have occurred in our fauna; they are of small size, and are easily known by the antennæ being inserted in small foveæ upon the upper surface of the beak. The transverse carina of the prothorax as in the preceding tribe is basal, suddenly flexed, forming a right angle, and extended a short distance along the sides; the antennæ are slender, and the last three joints form a loose club. The elytra are regularly striate as in all the preceding tribes and groups of the family.

Antennæ with second joint shorter than the first. **Aræocerus.**
Antennæ with second joint as long as the first, elytra striate. **Choragus.**

Aræocerus fasciculatus has become cosmopolitan in articles of commerce. Choragus occurs in the Atlantic States.

Tribe IV.—XENORCHESTINI.

The species of this tribe have lost all appearance of the family, and indeed of Rhynchophora. Those known in our fauna might be readily mistaken for small Cryptocephali; while the Maderan species figured by Wollaston* seems to resemble in miniature Gibbium.

The body is oval or ovate, very convex, and quite glabrous. The beak is so short as to be not distinct from the front; the antennæ are inserted upon the front, which is deflexed; the eyes are small, transverse oval. The first and second joints of the antennæ are longer and stouter; 3–7 shorter and thinner, nearly equal; eighth subtriangular, a little wider, 9–11 wider forming a loose club. Prothorax narrowed from the base forwards, ridge entirely basal, flexed at the hind angles, and continuing a short distance along the sides. Scutellum invisible. Elytra not striate. Tarsi with the first joint elongated; second triangular, emarginate; third bilobed; claws slender, not toothed.

Two genera are thus separated:—

Upper surface smooth. **Xenorchestes.**

Prothorax punctured; elytra with irregular double rows of punctures. **Euxenus.**

One species of Xenorchestes, and two of Euxenus are found in the Atlantic States. Xenorchestes was first described from Madeira, and is another evidence of the relations between the fauna of North America and that of the Atlantic Islands.

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* Insecta Maderensia, pl. viii. f. 8. The maxilla has a strikingly Adephagous form, the inner lobe being curved, acute, and sparsely spinose on the inner edge.

APPENDIX I.

THE following pages give, in brief, such corrections or additions as seem necessary to place the text in full accord with the latest works which have reached us:—

Page 72.—The genus Philhydrus has been divided by Dr. Sharp (Biol. Cent. Amer. Coleoptera, i. pt. 2, pp. 66 et seq.) into a number of genera, of which two occur in our fauna: *Philhydrus*, in which the mesosternum has a longitudinal carina, and the middle and hind tarsi 5-jointed, *Hydrocombus*, with the mesosternum at most slightly transversely carinate, and the middle and hind tarsi 4-jointed. The latter genus contains those species placed in the division Helochares by Dr. Horn (Proc. Amer. Philos. Soc. xiii., 1873, p. 130). Helochares proper has not yet been recognized in our fauna.

Berosus altus *Lec.* and one Mexican species form the genus *Derallus* Sharp (loc. cit., p. 77), which differs from Berosus in having the front tibiæ broader to tip and not slender.

Page 73.—Cyclonotum estriatum *Say* forms the type of *Phænonotum* Sharp (loc. cit., p. 97). In Cyclonotum the intercoxal carina is formed entirely by the mesosternum, in Phænonotum the metasternum is prolonged in front of the middle coxæ. Probably other species will enter this genus.

Page 165.—The name Helichus must be replaced by Dryops. Dr. Sharp states that the characters given by Erichson for the separation of these genera do not exist (*vide* Biol. Cent. Amer. Coleoptera, i. pt. 2, p. 119).

Page 193.—The genera of Throscidæ indicate two tribes, the Lissomini, represented in our fauna by Drapetes, and Throscini by Throscus and Pactopus. As the tribal names are used in the tables (pp. xxxii., xxxiv.), they are mentioned here to explain their absence on p. 193, the small number of genera not seeming to require tribal division.

Page 210.—The occurrence of additional material has enabled us to make a careful dissection of Omethes with the following result:—

OMETHES Lec.

Mentum short, transverse sides arcuately converging in front, separated at base from submentum by a narrow membranous space; ligula large, membranous, the palpi nearly as in Podabrus. Maxillæ bilobed, slightly pubescent within, the inner lobe larger, the two somewhat triangular in form; palpi as in Podabrus. Mandibles slender, arcuate, prominent, acute at tip, a slight tooth on the inner side near the middle. Labrum short, transverse, sinuate in front. Prosternum moderate in front of the coxæ, which are conical, prominent, contiguous, and with large trochantin. Middle coxæ conical, contiguous. Posterior coxæ transverse, prominent internally. Abdomen with seven segments, the first in great part concealed by the coxæ. Tarsi with the third and fourth joints lobed beneath, claws dilated at base in a broad tooth. Metathoracic episterna straight on the inner side. Epipleuræ distinct.

In addition to the above characters, the gular sutures are observed to be distant and parallel.

The characters above given are essentially those of the Telephorinæ, excepting in the structure of the third and fourth tarsal joints, in which an approach is made to the last tribe of the Lampyrinæ. We, therefore, conclude that the view expressed in the preceding edition of this work (p. 188) is correct, and that Omethes must be regarded as a connecting link between the two sub-families. The following modification of the table (*ante*, p. 210) is suggested:—

Tarsi with joints 3–4 lobed beneath; mentum moderate; gular sutures distant and parallel.	OMETHINI.
Tarsi simple, or with fourth joint lobed beneath;	
Mentum very long, broader in front.	CHAULIOGNATHINI.
Mentum small, often semimembranous.	TELEPHORINI.

Excepting in a group of Telephorini the gular sutures are confluent in the last two tribes.

Page 304.—The occurrence of Trichoxys Hartwegii *White* in Arizona requires the insertion of the genus. It is closely related to Cyllene, and differs in the absence of the excavation at the base of the pronotum, a character of very doubtful value.

APPENDIX II.

At our request, Mr. S. Henshaw, of Boston, has prepared the following list of bibliographical references to memoirs in which more or less complete synopses of the families, genera, and species of the Coleoptera of the United States have been published. Though many of these synopses are quite old, and require remodelling by the aid of our increased experience and larger collections, they are the best now accessible, and this systematic list of them will greatly facilitate the determination of the described species.

REFERENCES FOR SPECIFIC IDENTIFICATION.

By SAMUEL HENSHAW.

While care has been taken to include in the list all the more useful references, it should not be considered as a bibliography, as many of the earlier papers and the larger monographs which treat but incidentally of the species of our fauna have been purposely omitted as well as all mention of the genera containing single species.

CICINDELIDAE.

Sexual characters, etc. Horn, Trans. Amer. Ent. Soc., 1876, v. 5, p. 232–240.

Omus. *Synoptic table.* Horn, Bull. Brooklyn, Ent. Soc., 1878, v. 1, p. (6–8) 12–14.

Tetracha. *Characters.* Schaupp, Bull. Brooklyn Ent. Soc., 1878, v. 1, p. (8) 14.

Cicindela. *Revision.* LeConte, Trans. Amer. Philos. Soc., 1857, n. ser., v. 11, p. 27–63, plate.

Notes, etc. LeConte, Trans. Amer. Ent. Soc., 1875, v. 5, p. 157–162.

CARABIDAE.

Descriptive catalogue. LeConte, Ann. Lyc., 1848, v. 4, p. 172–474.

Classification. LeConte, Trans. Amer. Philos. Soc., 1853, n. ser., v. 10, p. 363–403.

Classification. Horn, Trans. Amer. Ent. Soc., 1881, v. 9, p. 91–196, plates.

Omophron. *Synopsis.* Horn, Trans. Amer. Ent. Soc., 1870, v. 3, p. 71–75.

Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1878, v. 1, p. ~~4~~. 5.

Trachypachys. *Synoptic table.* Horn, Bull. Brooklyn Ent. Soc., 1878, v. 1, p. 30.

Cychrus. *Synopsis.* Horn, Trans. Amer. Ent. Soc., 1878, v. 7, p. 168–185.

Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1879, v. 1, p. 79–82.

Nomaretus. *Synoptic table.* Horn, Bull. Brookl. Ent. Soc., 1879, v. 1, p. 79.

Carabus. *Synoptic table.* Crotch, Trans. Amer. Ent. Soc., 1876, v. 5, p. 247–248; Bull. Brooklyn Ent. Soc., 1878, v. 1, p. 66.

Calosoma. *Notes.* LeConte, Proc. Acad., 1862, p. 52–53.

Synoptic table. LeConte, Bull. Brooklyn Ent. Soc., 1878, v. 1, p. 64–66.

Elaphrus. *Synoptic table.* Crotch, Trans. Amer. Ent. Soc., 1876, v. 5, p. 246; Bull. Brooklyn Ent. Soc., 1878, v. 1, p. 6.

Blethisa. *Synoptic table.* Crotch, Trans. Amer. Ent. Soc. 1876, v. 5, p. 247; Bull. Brooklyn Ent. Soc., 1878, v. 1, p. 29.

Loricera. *Synoptic table.* Horn, Bull. Brookl. Ent. Soc., 1878, v. 1, p. 29.

Notiophilus. *Synoptic table.* Crotch, Trans. Amer. Ent. Soc., 1876, v. 5, p. 247; Bull. Brooklyn Ent. Soc., 1878, v. 1, p. 30.

Nebria. *Synopsis.* Horn, Trans. Amer. Ent. Soc., 1870, v. 3, p. 97–104; LeConte, Bull. U. S. Geol. Surv., 1878, v. 4, p. 473–480.

Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1878, v. 1, p. 45–46.

Pelophila. *Synoptic table.* Horn, Bull. Brookl. Ent. Soc., 1878, v. 1, p. 63.

Promecognathus. *Synoptic table.* Schaupp, Bull. Brooklyn Ent. Soc., 1879, v. 2, p. 15.

Pasimachus. *Monograph.* LeConte, Ann. Lyc., 1848, v. 1, p. 141–151.

Synopsis. LeConte, Bull. Buffalo Soc. Nat. Sci., 1874, v. 1, p. 266–273.

Synoptic table. LeConte, Bull. Brooklyn Ent. Soc., 1879, v. 2, p. 15–16.

Scarites. *Characters.* Schaupp, Bull. Brookl. Ent. Soc., 1879, v. 2, p. 16.

Dyschirius. *Synopsis.* LeConte, Proc. Acad., 1857, p. 75–80.

Synoptic table. LeConte, Bull. Brooklyn Ent. Soc., 1879, v. 2, p. 17–18; 31.

Clivina. *Synopsis.* LeConte, Proc. Acad., 1857, p. 81–82.

Synoptic table. LeConte, Bull. Brooklyn Ent. Soc., 1879, v. 2, p. 32–34.

Species grouped. Horn, Trans. Amer. Ent. Soc., 1881, v. 9, p. viii.

Schizogenius. *Synopsis.* LeConte, Proc. Acad., 1857, p. 82–83.

Synoptic table. LeConte, Bull. Brooklyn Ent. Soc., 1879, v. 2, p. 34; 59.

Ardistomis. *Synopsis.* LeConte, Proc. Acad., 1857, p. 80.

Synoptic table. LeConte, Bull. Brooklyn Ent. Soc., 1879, v. 2, p. 32.

Panagæus. *Synoptic table.* LeConte, Bull. Brooklyn Ent. Soc., 1879, v. 2, p. 59.

Bembidium. *Synoptic catalogue.* LeConte, Proc. Acad., 1857, p. 2–6.

Anillus. *Characters.* Horn, Trans. Amer. Ent. Soc., 1868, v. 2, p. 127.

Patrobus. *Synoptic table.* Horn, Trans. Amer. Ent. Soc., 1875, v. 5, p. 130–131; Bull. Brooklyn Ent. Soc., 1882, v. 5, p. 47–48.

Pogonus. *Characters.* Horn, Trans. Am. Ent. Soc., 1876, v. 5, p. 249–250.
Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1882, v. 5, p. 47.

Trechus. *Characters.* Horn, Trans. Amer. Ent. Soc., 1875, v. 5, p. 131.
Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1882, v. 5, p. 48.

Anophthalmus. *Synoptic table.* Horn, Trans. Amer. Ent. Soc., 1368, v. 2, p. 126; ibid. 1871, v. 3, p. 329; Bull. Brooklyn Ent. Soc., 1882, v. 5, p. 48.

Myas. *Synoptic table.* Horn, Bull. Brooklyn Ent. Soc., 1882, v. 5, p. 63.

Pterostichus.* *Synopsis.* LeConte, Journ. Acad., 1852, ser. 2, v. 2, p. 234–248; 253–255.
Synoptic table. LeConte, Proc. Acad., 1873, p. 302–311; Bull. Brookl. Ent. Soc., 1882, v. 5, p. 15–16; 23–24; 31–32; 39–42.

Evarthrus. *Synopsis.* LeConte, Journ. Acad., 1852, ser. 2, v. 2, p. 224–234.
Synoptic table. LeConte, Proc. Acad., 1873, p. 318–320; Bull. Brookl. Ent. Soc., 1880, v. 3, p. 21–22; 49; 73–74.

Amara. *Notes.* LeConte, Proc. Acad., 1855, v. 7, p. 346–356.
(division **Bradytus.** *Synoptic table.* Horn, Trans. Amer. Ent. Soc., 1875, v. 5, p. 128.
(division **Amara.** *Synoptic table.* Horn, Trans. Amer. Ent. Soc., 1875, v. 5, p. 127.

Loxandrus. *Synopsis.* LeConte, Journ. Acad., 1852, ser. 2, v. 2, p. 250–253.
Synoptic table. LeConte, Proc. Amer. Philos. Soc., 1878, v. 17, p. 375–376; Bull. Brooklyn Ent. Soc., 1880, v. 3, p. 19–20; 73.

Diplochila. *Synoptic table.* Horn, Bull. Brookl. Ent. Soc., 1880, v. 3, p. 52.

Dicælus. *Synoptic table.* Horn, Bull. Brookl. Ent. Soc., 1880, v. 3, p. 51–52.

Badister. *Synoptic table.* LeConte, Trans. Amer. Ent. Soc., 1880, v. 8, p. 165; Bull. Brooklyn Ent. Soc., 1882, v. 5, p. 7.

Calathus. *Synopsis.* LeConte, Proc. Acad., 1854, v. 7, p. 36–38.
Synoptic table. LeConte, Proc. Acad., 1860, p. 317–318.

Platynus. *Synopsis.* LeConte, Proc. Acad., 1854, v. 7, p. 39–58; Bull. Brooklyn Ent. Soc., 1879, v. 2, p. 43–58.

Olisthopus. *Synopsis.* LeConte, Proc. Acad., 1854, v. 7, p. 58.
Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1882, v. 5, p. 63.

Casnonia. *Synoptic table.* LeConte, Bull. Brookl. Ent. Soc., 1880, v. 2, p. 85.

Galerita. *Synoptic table.* LeConte, Bull. Brookl. Ent. Soc., 1879, v. 2, p. 61.

Zuphium. *Synoptic table.* LeConte, Bull. Brooklyn Ent. Soc., 1879, v. 2, p. 61–62; 85.

Diaphorus. *Synoptic table.* LeConte, Bull. Brooklyn Ent. Soc., 1879, v. 2, p. 62; 85.

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* For Lophoglossus, see LeConte, Journ. Acad., 1852, ser. 2, v. 2, p. 248–249; Proc. Acad., 1873, p. 316; Bull. Brookl. Ent. Soc., 1880, v. 3, p. 49–50, and for Holciophorus, Horn, Bull. Brookl. Ent. Soc., 1880, v. 3, p. 50.

Thalpius. *Synoptic table.* LeConte, Bull. Brookl. Ent. Soc., 1879, v. 2, p. 62.
Ega. *Synoptic table.* LeConte, Bull. Brooklyn Ent. Soc., 1880, v. 2, p. 85.
Tetragonoderus. *Synopsis.* Horn, Trans. Amer. Ent. Soc., 1882, v. 10, p. 127–129.
Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1881, v. 4, p. 39.
Lebia. *Synopsis.* Horn, Trans. Amer. Ent. Soc., 1872, v. 4, p. 130–142.
Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1880, v. 2, p. 86–88.
Dromius. *Synopsis.* Horn, Trans. Amer. Ent. Soc., 1882, v. 10, p. 132–133.
Synoptic table Horn, Bull. Brooklyn Ent. Soc., 1881, v. 4, p. 39.
Apristus. *Synopsis.* Horn, Trans. Am. Ent. Soc., 1882, v. 10, p. 133–134.
Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1882, v. 4, p. 44.
Blechrus. *Synopsis.* Horn, Trans. Am. Ent. Soc., 1882, v. 10, p. 134–135.
Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1882, v. 4, p. 53.
Axinopalpus. *Synopsis.* Horn, Trans. Amer. Ent. Soc., 1882, v. 10, p. 135–136.
Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1881, v. 4, p. 39.
Callida. *Synopsis.* Horn, Trans. Amer. Ent. Soc., 1882, v. 10, p. 138–142.
Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1882, v. 4, p. 55.
Philophuga. *Synopsis.* Horn, Trans. Am. Ent. Soc., 1882, v. 10, p. 142–145.
Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1882, v. 4, p. 54.
Plochionus. *Synopsis.* Horn, Trans. Am. Ent. Soc., 1882, v. 10, p. 145–146.
Synoptic table. LeConte, Bull. Brooklyn Ent. Soc., 1880, v. 2, p. 86.
Pinacodera. *Synopsis.* Horn, Trans. Am. Ent. Soc., 1882, v. 10, p. 146–149.
Synoptic table. Horn, Bull. Brooklyn Ent. Soc., 1881, v. 4, p. 40.
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